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Eighth Annual Report

OF THE  
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# Commissioner of Highways

## Ontario

### 1903

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PRINTED BY ORDER OF  
THE LEGISLATIVE ASSEMBLY OF ONTARIO

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*TORONTO:*  
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To the Honorable F. R. LATCHFORD,  
Commissioner of Public Works.

Sir,—I have the honor to submit to you the following report for the year 1903, being my eighth annual report on Road Improvement in Ontario.

I have the honor to be, Sir,

Your obedient servant,

A. W. CAMPBELL,

Commissioner of Highways.

Parliament Buildings,  
Toronto, Ontario, 29th Feb., 1904.





# Eighth Annual Report

OF THE

## Commissioner of Highways

### WHAT IS BEING DONE FOR BETTER ROADS.

Much has been done, and is being done, to improve the condition of country roads in this Province. In 1796, when the first Parliament of Ontario (then Upper Canada) assembled at Niagara-on-the-Lake, among the first Acts was one establishing a system for opening and maintaining roads. From that day to the present, road-making has been one of the chief concerns of municipal government. Unfortunately, much of the effort and energy applied to the improvement of roads has not been systematically directed, so that the condition of the average country road is, by no means, what it should be. This is unfortunate in many ways. But the recent activity in regard to "the good roads movement" has accomplished

facts pertaining to the problem leads to but one conclusion. The development of any, of every, country is absolutely impossible without good country roads.

Good or bad country roads are not merely a matter of convenience or inconvenience to the farmer and his family. They affect the annual income, and the value of the farm many times what the cost of a good road would be. Millions of dollars have been spent upon railways and their equipment, canals, harbors, lake and ocean steamship lines, yet without common country roads all this vast expenditure would be futile. Every ton of freight has to be carried to or from the railway or steamer over the common roads. At a period of bad roads, railway and steamship traffic is



A County Road in Wellington.

much, and is most encouraging. A general reform of roadmaking methods is gradually being brought about, with a corresponding improvement in the condition of the roads.

In the past, roadmaking has been, by many, too lightly regarded. Its importance has not been seriously realized. Yet the result of a careful summing up of all

reduced to a minimum and the current of trade is much impeded. No public work would contribute more to the individual prosperity of the citizens of every class, than would the general improvement of country roads. While farmers would be most largely and most directly affected, all would feel the benefit. A country of good roads is invari-

ably a country of good houses, good barns, and a contented and prosperous farming community.

The organization of the Ontario Good Roads Association in 1894 was the first step towards a campaign for road reform. It was felt by those interested in this Association that the existing systems of road maintenance, almost wholly dependent upon statute labor, had outlived their usefulness, and that the adoption of modern and efficient methods should be urged. Delegates were selected to address farmers' institutes, dairymen's and other conventions held in the Province. In this way the subject was first brought before the public, and a more active interest aroused.

Two years later, in 1896, the Ontario Government created an office, that of the Provincial Highway Commissioner, for the purpose of further stimulating an interest in the improvement of country roads. By means of literature on the subject, township councillors and others having supervision of road-building throughout the Province, have been instructed as to the best means to adopt in obtaining economical and permanent results. Public meetings have been held in all parts of the Province, addressed by the Commissioner of Highways, at which roadmaking in all its branches has been discussed. These meetings, with rare exceptions, have been largely attended, and a strong interest in road improvement has been aroused, which, directly or indirectly, is turned to practical account on the roads of the districts thus visited, and in the system of road management. Throughout the Province there has been a general improvement as regards methods of draining roads, grading them, applying gravel or stone, construction of culverts and bridges, and the roadmaking implements used.

By the end of 1903, about one hundred and thirty townships had abolished or commuted statute labor, and in its place (with more or less modification), had adopted systems whereby fewer and more permanently appointed road overseers take the place of the pathmasters of the statute labor system, and by which all road work is paid for in a business-like way. Proper roadmaking machinery is being employed, definite methods of doing the work have been established, and, altogether, new life has been infused into road improvement wherever the new plans have been adopted.

The Eastern Ontario Good Roads Association, formed in 1901, has been active in the eastern portion of the Province in advancing the cause of better roads, and has rendered exceedingly val-

uable service, the "good roads train" operated throughout the eastern counties in 1901-2, being the most noteworthy of its efforts.

The Western Ontario Good Roads Association, formed in 1902, on a basis similar to the Eastern Ontario Association, has held three very interesting conventions, while more active measures are in view.

As is to be expected, municipalities are everywhere, with the growing wealth and requirements of the country, making more generous appropriations to the work of road improvement. This is as it should be. The saving effected by good roads, the loss resulting from bad roads, are such as to satisfy every citizen who studies the question that the more permanent improvement of the roads cannot be too soon brought about in the interest of true economy. The cheapest in first cost is rarely the most economical after a term of years. Had the councillors of ten years ago expended money upon the roads with a view to the requirements of to-day, as well as their temporary needs, the good roads movement would not have so great a task before it. Councils of to-day should not forget that good roads will be needed ten years hence, and by working to this end, they will render a vastly greater service to the present interests as well.

Legislation with regard to roads has been progressive, but without incautious haste. Toll roads, the purchase of road machinery, and the appropriation of a million dollars to aid highway improvement, have been the principal matters for Governmental consideration. It has been urged by some that the Legislature might take action with regard to statute labor. On the other hand, it has been felt that the individual townships are so rapidly, of their own accord, making a change in this respect, that further legislation in the matter is unnecessary. Every township has for many years had the power to do away with statute labor, and to establish such a plan for road management as they may consider best suited to local requirements. The spirit of most municipal legislation has been permissive, rather than compulsory, and it is doubtful if it would yet be in the best interests of road improvement to make any exception as regards statute labor, in spite of its many unfair features. Instead, by carrying on a campaign of education, the people will better understand the reasons for a change, and will undertake it with a greater willingness, to make the new methods a success. The best system that can be devised for making and repairing the roads may be injurious rather than beneficial if it is

not intelligently and faithfully carried into effect. To ensure the success of new methods it is necessary that, at

least, the interest and enthusiasm of a certain portion of the people be first aroused.



## COUNTY ROAD ASSOCIATIONS.

Representatives from all the municipalities within the United Counties of Northumberland and Durham assembled at Cobourg on the 27th of January, 1904, and organized the "Counties Good Roads Association," the first of so local a nature to be formed in the Province. Such an association could exist with profit in every county. Road improvement is a problem deserving, at the present time, and for all time to come, the most careful study of municipal councillors and officials. The interchange of ideas, as to methods of roadmaking, is alone of much importance, while there are certain matters of more than town or township importance, which affect the country as a whole, and which can best be discussed and adjusted at a convention of all municipal councillors within the county. Where a county is small, the association might comprise the councillors of two or three adjoining counties.

The notice of the convention, signed by Neil F. MacNacht, Counties' Clerk, and addressed to each municipal council in the county, was as follows:

"In accordance with instructions from the counties' council and the wishes of the majority of the municipalities of

these counties, expressed in reply to circular mailed on 24th July last, I am directed to call a meeting of delegates from the several municipalities to meet here on Wednesday, Jan. 27th, 1904, at 1 o'clock p.m. for the formation of a Counties' Good Roads Association. The majority of the municipalities favor two delegates from each. You can be guided in your own judgment in this regard for the initial meeting. A. W. Campbell, Esq., Commissioner of Highways, will be present to assist.

"The principal subjects to be considered will be: The best system of managing roads; the implements necessary for doing the work in the best and cheapest manner; the most serviceable material to use in the construction and repair of roads; how this material should be prepared and how it should be applied; the proper material for use in building culverts, bridges, abutments, superstructures, floors, etc., and the proper system for repairing and looking after the roads when they once have been properly built.

"I trust that your council will appoint delegates with power to act in the best interests of road building within your municipality and the counties generally, and furnish them with their credentials."

## STATUTE LABOR.

The system of statute labor was established in this Province more than a century ago, under the regime of General Simcoe, the first Lieutenant-Governor of the newly-formed Province of Upper Canada. The population was then very scattered, about 70,000 in all, while Toronto was little more than an Indian camping ground. Statute labor was in keeping with pioneer life, when the need for roads was urgently felt,

when the work consisted of cutting down trees, clearing the road allowance of logs and stumps, corduroying swamps and throwing up an earth grade.

To-day circumstances are very different. The pioneer work has been done on the roads, as well as on the farm. On the latter we have dispensed with the cradle and the flail, and are using self-binders, steam threshers, and many other efficient farming implements. For





[STREET IN RENFREW.]

roadwork, machinery has been provided—graders, stone-crushers, steam rollers—all a means of economy, just as much as modern farm machinery. It should not be difficult for the people of this agricultural Province, progressive in all that pertains to farming, to understand that improved methods are needed for road-making, and that a system in keeping with these methods should be adopted.

### Responsibility is Divided.

Under the statute labor system responsibility for all work is not centred in one man. No one officer can be held responsible for the condition of the roads, nor for the expenditure of money and labor upon them. Responsibility is first distributed among the members of the council, and by them among fifty or one hundred pathmasters. When work is improperly done, or money misspent, there is no one whom the ratepayers can call to account with any degree of effect.

### Does not Meet Present Conditions

The payment of a road fund in labor is too vague and clumsy to meet present conditions. The need of roads is not so keenly felt as in the time of early settlement, and there is not the same incentive to hard and careful work. Men work on the roads very much as they

work on their farms. Some are energetic and resourceful; but some are shiftless, some lazy, some stupid, some careless, and so the list might be carried on. Each works, plans the work, or oversees it according to his own ideas. The statute labor system in this respect is not so much a system as an entire absence of system.

There is not, to-day, a united effort put forth by all to do good work on the roads, as was done under pioneer conditions. Even if there were, it would not be efficient in the operation and management of machinery, and in laying the quality of roadbed demanded by those who use the roads.

### Money Appropriations are not Economically Expended.

Township roads are not kept by statute labor done. The ratepayers of many townships who know only of the grants for small repairs, scattered here and there over the townships, do not realize how much money is, in the aggregate, spent on their roads in the course of a year. The amount is in no sense objectionable, and if the money were applied to the best advantage there are few townships which could not spend even more than they are now doing on road improvement.

The difficulty arises from the fact that this money is spent on the statute labor



basis. The making of money appropriations was commenced many years ago with a view to supplementing statute labor. They were then very small amounts, but with the growth of the Province, this practice has increased, until, in many instances, the total money appropriation exceeds the statute labor for the year, valued at one dollar a day. Thus the money spent has constantly increased until it is of greater consequence than the statute labor, but the latter is permitted to govern the expenditure of the former.

### Repairs are Not Made When Needed.

Under statute labor, work is done at one time of the year only. For the remainder of the year the roads are neglected, and repairs are not made when first needed. In the maintenance of a road, there is nothing more economical, or more satisfactory to the users of the road, than to have repairs made as soon as signs of wear appear. When roads are kept in a smooth condition, they are pleasant to drive on, and in a term of years cost much less than a road that is allowed to get rough. A rough road wears out much more quickly than a smooth road does. It is the hammering and pounding of a wheel on a rough road that does most damage—not the even roll of a wheel on a smooth road. When a depression starts on the surface of a road, the hammering of wheels as they drop into it very quickly creates a rut. Statute labor does not provide for the constant maintenance of a road.

### Improvements are Not Made Systematically.

Road improvements, under the statute labor system, are not carried out systematically from year to year. Instead, it is understood that the pathmaster for the year will do such work as he desires in front of his own farm. No

matter how urgently grading or ditching may be needed, if it is more convenient for the farmer to haul gravel he does so, or vice versa. The wishes of the man who is to do the work, not the work itself, are a first consideration. While one road section may be good, and statute labor properly performed, there are other sections in the township where work is only half done. It is almost useless for one section to keep up its roads when those who do the work on them are certain to drop off at the end of them into bog holes and impassable mires of the surrounding sections. The work of one year can have no connection with that of the following year in carrying out a well-defined plan. The work of one pathmaster may even be rendered useless by the work of a new pathmaster the following year, while there is no union between one road-beat and those adjoining it.

### Statute Labor is Not Equitable.

The difficulty of maintaining a road may increase or diminish half a dozen times in crossing a township, according as the soil is clay, loam, sandy, gravelly, dry, or swampy, yet there is not, under statute labor, a proper means of equalizing the work of keeping up the roads, and it is, therefore, inevitable that a road cannot be kept in a uniformly good condition. This is unfair to many of the users of the roads, as well as to those who are required to build and keep in repair the difficult sections.

Men who are interested in securing money grants are encouraged to neglect their own roadwork. It follows that those who do their roadwork faithfully must also pay for the work done by means of money grants for the men who will not perform their statute labor.

Some men give a full day's work, others pay one dollar, or the township rate of commutation. Other men give only a part of a day's work, and in



A Good Gravel Road.—But with a wider grade than is necessary.

some townships methods are so lax that they can escape without giving either labor or money.

A difference of a dollar in assessment, or an acre in the extent of a farm, may make a difference of a day in the amount of statute labor required.

A good pathmaster will create ill-feeling between himself and some of his shiftless neighbors if he demands even a reasonable performance of their statute labor. Rather than do this, most pathmasters permit their men to work as they see fit, or come equipped with any class of tools, wagons or teams.

### The System is Wasteful.

A great amount of statute labor is wholly wasted—the time spent by a hundred or so pathmasters attending the clerk's office to qualify for office, calling out those on their road list, and acting as bosses; the time lost by those who come to work too late or stop too early; the time lost in doing work as an annual holiday, in carelessly planning the work, in hauling sand and loan instead of gravel, in working at wrong seasons of the year, in having too few teams or too few shovellers, etc.

### Better Management is Needed.

Nearly all the foregoing objections to statute labor centre around the fact that roadmaking is a matter requiring, on the part of those who have it in charge, experience, study, and a certain class of ability. It is a very common idea that any one can manage a farm, that no previous training is required. The same impression exists to even a greater degree regarding roadmaking, and is responsible for an alarming amount of waste, as well as for bad roads. This is exemplified by the fact that some roads are graded forty feet wide, some thirty, some twenty, some less. Some think a road should be rounded up in the centre to a dangerous height, others think a road should be flat, and see

nothing wrong if the road is hollow in the centre. Some think a certain road should be drained, others that it should be mounded up with gravel, and so on through all details of improving the one road; yet all cannot be right. Pathmasters do not remain in office long enough to become expert, and even if they did, they would be much handicapped in using statute labor to the best advantage, owing to the difficulty of getting men when they are needed, in getting them to do the work well, or as they are directed, and so on throughout all the details of the work. Statute labor does not provide an experienced head to manage the work, and is, therefore, deficient.

### Statute Labor in Roxborough.

Evidence as to the disadvantages of statute labor arise from many sources. As an instance, we quote from a report of R. C. McGregor, Clerk of Roxborough Township:

"A few years since I took note of the first day our road division worked their statute labor, and the work for that day was graveling a certain part of the highway. The gravel had to be drawn about one mile by teams and waggons. A man with a team and waggon, plough or scraper, counts three days, which would be \$3. The same year, in different parts of the township, parts of the roads were gravelled by parties drawing the gravel about the same distance, or a little over, at the rate of 65c per rod. When this day's work was ended, I with another man measured the portion gravelled that day. In making our calculation, we only allowed each man 50c and team with man \$1.50. At that rate the portion made for that day came to \$2.42 per rod. Hence more roads would be completed by selling the work, and each man to pay only 25c for every day assessed. By all means commutation would be more profitable, no matter how calculated."

## SYSTEM BEING ADOPTED BY TOWNSHIPS.

The defects of statute labor are not being pointed out, and the system condemned without giving a better substitute. This substitute is not in the experimental stage. It has been tried, and its advantages proven by a hundred and more townships of the Province. It is not contended that this system can be adopted by a by-law of the township, and then left to itself to make and repair the roads. The best system that can be devised will prove a failure unless the councillors and people

of the township try to make good use of it. This system, particularly until it is thoroughly established, will require the painstaking effort of the council and public-spirited men of the township to carry it into effect. It is particularly important that the road commissioner or commissioners appointed by the council shall be thoroughly capable and practical men, who can plan the work of improvement with a good understanding of the principles of roadmaking, can carry the work on methodically and with

good judgment, can conduct the purchasing and business portion of the office to the best advantage, and who can direct and manage the men employed.

The system recommended should be adapted in its details to local conditions, but the general features adopted are the following :

Statute labor is commuted at a fixed rate per day, and the amount is collected at the same time as the other taxes by the township tax collector ; or, if preferred, in place of commuting statute labor, a special rate on the township assessment may be levied for road purposes, thereby entirely doing away with the statute labor roll.

Money can be handled to very much better advantage than can the statute labor. The money can be expended at the most favorable time of the year, where it is most needed, and faithful work can be demanded of those earning it.

One road overseer or commissioner is appointed for the entire township, or, if desired, the township is divided into a convenient number of divisions for road purposes, usually two, three, or four, and a road commissioner is appointed over each. This practically amounts to a reduction of the number of pathmasters, and the enlarging of the road beats. It is essential to the success of the proposed system. To merely commute statute labor and retain the former number of pathmasters, giving each a small amount to spend, means a perpetuation of most of the defects of the statute labor system.

It is not best for councillors to act as road commissioners. Councillors, like the pathmasters of the old statute labor system, are elected annually, and cannot become experienced. There is a tendency for them to use their office not so much for the benefit of the roads as to gain votes for the next election. The ratepayers are apt to become dissatisfied unless councillors perform the duties of commissioner without remuneration. Councillors cannot be so independent as are road commissioners, and they cost the township fully as much in commissions, mileage fees, etc.

The duties of the road overseer are :

(a) To supervise all work and repairs done on the roads and bridges within his division.

(b) To acquaint himself with the best methods of constructing and maintaining good roads, and of operating graders and other road machinery used by the township.

(c) To employ, direct and discharge all men and teams, required to carry on

the work, and to purchase necessary materials.

(d) To see that all washouts, drain and culvert obstructions, bridge failures, and other unforeseen defects are repaired or protected, with the least possible delay, so as to prevent further injury to the road, or accident to the users of the road, and to act promptly in all cases of emergency.

(e) To report to the council early in each year as to the work required the coming season, to carry out the instructions of the council with regard thereto, and to perform such other services as may be required of him from time to time, under the written instructions of council.

(f) To collect the poll tax in his division.

(g) To keep an accurate record of the men employed and the work done, and to furnish this written form to the reeve at proper intervals, in order that the reeve, upon being satisfied with the correctness of the statement, may issue cheques for the payment thereof.

(h) To stake out all works, and see that they are undertaken systematically, so that no time will be lost in taking men, teams and machinery from one part of the township to another.

(i) To supervise the performance of all work done by contract, and certify as to completion, acting as inspector for the township.

(j) To supervise the opening of snow roads under such regulations as, in the opinion of the council, the needs of the township may require.

(k) To report to the council at the close of each year, showing in detail the character, location, and cost of each separate work undertaken.

(l) Works, the cost of which will exceed a certain fixed amount (ordinarily from \$10 to \$20, as may be determined by the council) may be let by contract to the lowest satisfactory bidder, but in the event of any work being duly advertised to be let by contract, and the tenders being too high, in the opinion of the commissioner or the reeve, it should be the duty of the former to undertake the work by day labor under his own direction.

The commissioner should be retained in office as permanently as circumstances permit, in order that his experience, increasing from year to year, may enable him to do more perfect and economical work. Continuance in office should be the reward of good service. Independent, capable road overseers are needed.

The commissioner should have exclusive control and management of the maintenance, repair and improvement of all



## SCHEDULE OF TOWNSHIPS IN WHICH STATUTE LABOR IS COMMUTED OR ABOLISHED.

Township.	County	System as it affects Statute Labor.	Year change was made	No. of Road Divisions.	No. of Road Commissioners or Overseers.	Special Road or Commutation Rate.	Remarks.
Acheide.	Middlesex	Abolished.	1904	6	3	60c. per day.	
Adjida.	Simcoe	Wholly commuted.	1904	7	6	60c.	
Adolphustown.	Lennox	One-half.	1902	7	3	60c.	See page 18.
Alexander.	Wentworth	Wholly	1898	23	23	75c.	
Assiniboine.	Manitowlin	"	1904	3	3	\$1.00	
Awood.	Rainy River.	"	1902	1	1	\$1.00	See page 18.
Barton.	Wentworth	"	1894	9	9	50c.	
Bastard.	Leeds	Four divs.	1898	5	5	50c.	Councillors act as commissioners.
Bayham.	Frontenac	Wholly	1903	62	62	\$1.00	
Bertie.	Welland	"	1901	3	3	75c.	See page 18.
Bedford.	Wentworth	"	1896	19	19	50c.	See page 18.
Blainbrook.	Oxford	Abolished	1899	60	60	50c. per day.	
Blanshard.	Perth	14 divs. commuted.	1898	5	5	50c.	
Blenheim.	Braut	15 "	1898	5	5	60c.	
Burlford.	Hastings.	Wholly	1901	41	41	75c.	page 18.
Carlow.	Durham	"	1902	41	41	75c.	
Cavan.	Russell	Wholly commuted.	1898	1	1	40c. per day.	
Clarence.	Lincoln	"	1903	1	1	\$1.00	
Clifton.	Algoma	"	1904	5	5	50c.	See page 19.
Colden.	Essex	Abolished	1898-1900	24	24	60c.	
Colchester N.	Leeds	Two divs. commuted.	1903	4	4	\$1.00	
Crosby, N.	Laurel	Wholly	1902	4	4	50c.	See page 19.
Darling.	Middlesex	"	1900	22	22	40c.	
Delaware.	Grey	Abolished	1902	4	4	40c.	
Derby.	Wholly commuted.	"	1900	4	4	40c.	
Dorchester N.	Middlesex	"	1902	4	4	40c.	
Dorchester, S.	Elgin	"	1904	4	4	40c.	
Dover.	Keel	"	1901-02	5	5	50c.	Commissioners to be appointed.
Downie.	Perth	Abolished	1901	5	5	50c.	See page 19.
Dumfries.	Braut	Wholly commuted.	1901	30	30	75c.	
Dysart, et al.	Haliburton	Abolished.	1904	4	4	75c.	
Edon.	Victoria	"	1904	4	4	75c.	See page 19.
Elizabethtown.	Leeds	Wholly commuted.	1902	10	10	\$1.00	See page 20.
Emmiskillen.	Lambton	Five divs.	1903	4	4	50c.	
Erasmus.	Wellington	Wholly	1902	4	4	50c.	
Esquesing.	Nation	"	1904	4	4	50c.	
Etobicoke.	York	Partially	1902	2	2	\$1.00 per day.	See page 20.
Fitzroy.	Wholly	"	1902	2	2	75c.	
Flamboro, E.	Carleton	Wholly	1903	4	4	50c.	See page 20.
Flamboro, W.	Wentworth	"	1902	3	3	50c.	See page 20.
Fullarton.	Perth	Abolished	1901	5	5	50c.	See page 20.
Gloucester.	Carleton	Wholly commuted.	1901	5	5	50c. per day.	
Gordon.	Manitowlin	"	1902	4	4	\$1.00	
Go-field, S.	Essex	Abolished	1901	4	4	60c. per day.	See page 20.
Goulburn.	Carleton	Wholly commuted.	1892	2	2	50c.	See page 22.
Grimshaw, N.	Lincoln	"	1901	3	3	65c.	See page 22.
Grimsey, N.	Lincoln	"	1901	3	3	65c.	See page 22.
Guelpi.	Wellington	Abolished	1902	4	4	60c.	See page 20.



1903	1902	1901	1900	1899	1898	1897	1896	1895	1894	1893	1892	1891	1890	1889	1888	1887	1886	1885	1884	1883	1882	1881	1880	1879	1878	1877	1876	1875	1874	1873	1872	1871	1870	1869	1868	1867	1866	1865	1864	1863	1862	1861	1860	1859	1858	1857	1856	1855	1854	1853	1852	1851	1850	1849	1848	1847	1846	1845	1844	1843	1842	1841	1840	1839	1838	1837	1836	1835	1834	1833	1832	1831	1830	1829	1828	1827	1826	1825	1824	1823	1822	1821	1820	1819	1818	1817	1816	1815	1814	1813	1812	1811	1810	1809	1808	1807	1806	1805	1804	1803	1802	1801	1800	1799	1798	1797	1796	1795	1794	1793	1792	1791	1790	1789	1788	1787	1786	1785	1784	1783	1782	1781	1780	1779	1778	1777	1776	1775	1774	1773	1772	1771	1770	1769	1768	1767	1766	1765	1764	1763	1762	1761	1760	1759	1758	1757	1756	1755	1754	1753	1752	1751	1750	1749	1748	1747	1746	1745	1744	1743	1742	1741	1740	1739	1738	1737	1736	1735	1734	1733	1732	1731	1730	1729	1728	1727	1726	1725	1724	1723	1722	1721	1720	1719	1718	1717	1716	1715	1714	1713	1712	1711	1710	1709	1708	1707	1706	1705	1704	1703	1702	1701	1700	1699	1698	1697	1696	1695	1694	1693	1692	1691	1690	1689	1688	1687	1686	1685	1684	1683	1682	1681	1680	1679	1678	1677	1676	1675	1674	1673	1672	1671	1670	1669	1668	1667	1666	1665	1664	1663	1662	1661	1660	1659	1658	1657	1656	1655	1654	1653	1652	1651	1650	1649	1648	1647	1646	1645	1644	1643	1642	1641	1640	1639	1638	1637	1636	1635	1634	1633	1632	1631	1630	1629	1628	1627	1626	1625	1624	1623	1622	1621	1620	1619	1618	1617	1616	1615	1614	1613	1612	1611	1610	1609	1608	1607	1606	1605	1604	1603	1602	1601	1600	1599	1598	1597	1596	1595	1594	1593	1592	1591	1590	1589	1588	1587	1586	1585	1584	1583	1582	1581	1580	1579	1578	1577	1576	1575	1574	1573	1572	1571	1570	1569	1568	1567	1566	1565	1564	1563	1562	1561	1560	1559	1558	1557	1556	1555	1554	1553	1552	1551	1550	1549	1548	1547	1546	1545	1544	1543	1542	1541	1540	1539	1538	1537	1536	1535	1534	1533	1532	1531	1530	1529	1528	1527	1526	1525	1524	1523	1522	1521	1520	1519	1518	1517	1516	1515	1514	1513	1512	1511	1510	1509	1508	1507	1506	1505	1504	1503	1502	1501	1500	1499	1498	1497	1496	1495	1494	1493	1492	1491	1490	1489	1488	1487	1486	1485	1484	1483	1482	1481	1480	1479	1478	1477	1476	1475	1474	1473	1472	1471	1470	1469	1468	1467	1466	1465	1464	1463	1462	1461	1460	1459	1458	1457	1456	1455	1454	1453	1452	1451	1450	1449	1448	1447	1446	1445	1444	1443	1442	1441	1440	1439	1438	1437	1436	1435	1434	1433	1432	1431	1430	1429	1428	1427	1426	1425	1424	1423	1422	1421	1420	1419	1418	1417	1416	1415	1414	1413	1412	1411	1410	1409	1408	1407	1406	1405	1404	1403	1402	1401	1400	1399	1398	1397	1396	1395	1394	1393	1392	1391	1390	1389	1388	1387	1386	1385	1384	1383	1382	1381	1380	1379	1378	1377	1376	1375	1374	1373	1372	1371	1370	1369	1368	1367	1366	1365	1364	1363	1362	1361	1360	1359	1358	1357	1356	1355	1354	1353	1352	1351	1350	1349	1348	1347	1346	1345	1344	1343	1342	1341	1340	1339	1338	1337	1336	1335	1334	1333	1332	1331	1330	1329	1328	1327	1326	1325	1324	1323	1322	1321	1320	1319	1318	1317	1316	1315	1314	1313	1312	1311	1310	1309	1308	1307	1306	1305	1304	1303	1302	1301	1300	1299	1298	1297	1296	1295	1294	1293	1292	1291	1290	1289	1288	1287	1286	1285	1284	1283	1282	1281	1280	1279	1278	1277	1276	1275	1274	1273	1272	1271	1270	1269	1268	1267	1266	1265	1264	1263	1262	1261	1260	1259	1258	1257	1256	1255	1254	1253	1252	1251	1250	1249	1248	1247	1246	1245	1244	1243	1242	1241	1240	1239	1238	1237	1236	1235	1234	1233	1232	1231	1230	1229	1228	1227	1226	1225	1224	1223	1222	1221	1220	1219	1218	1217	1216	1215	1214	1213	1212	1211	1210	1209	1208	1207	1206	1205	1204	1203	1202	1201	1200	1199	1198	1197	1196	1195	1194	1193	1192	1191	1190	1189	1188	1187	1186	1185	1184	1183	1182	1181	1180	1179	1178	1177	1176	1175	1174	1173	1172	1171	1170	1169	1168	1167	1166	1165	1164	1163	1162	1161	1160	1159	1158	1157	1156	1155	1154	1153	1152	1151	1150	1149	1148	1147	1146	1145	1144	1143	1142	1141	1140	1139	1138	1137	1136	1135	1134	1133	1132	1131	1130	1129	1128	1127	1126	1125	1124	1123	1122	1121	1120	1119	1118	1117	1116	1115	1114	1113	1112	1111	1110	1109	1108	1107	1106	1105	1104	1103	1102	1101	1100	1099	1098	1097	1096	1095	1094	1093	1092	1091	1090	1089	1088	1087	1086	1085	1084	1083	1082	1081	1080	1079	1078	1077	1076	1075	1074	1073	1072	1071	1070	1069	1068	1067	1066	1065	1064	1063	1062	1061	1060	1059	1058	1057	1056	1055	1054	1053	1052	1051	1050	1049	1048	1047	1046	1045	1044	1043	1042	1041	1040	1039	1038	1037	1036	1035	1034	1033	1032	1031	1030	1029	1028	1027	1026	1025	1024	1023	1022	1021	1020	1019	1018	1017	1016	1015	1014	1013	1012	1011	1010	1009	1008	1007	1006	1005	1004	1003	1002	1001	1000	999	998	997	996	995	994	993	992	991	990	989	988	987	986	985	984	983	982	981	980	979	978	977	976	975	974	973	972	971	970	969	968	967	966	965	964	963	962	961	960	959	958	957	956	955	954	953	952	951	950	949	948	947	946	945	944	943	942	941	940	939	938	937	936	935	934	933	932	931	930	929	928	927	926	925	924	923	922	921	920	919	918	917	916	915	914	913	912	911	910	909	908	907	906	905	904	903	902	901	900	899	898	897	896	895	894	893	892	891	890	889	888	887	886	885	884	883	882	881	880	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SCHEDULE OF TOWNSHIPS IN WHICH STATUTE LABOR IS COMMUTED OR ABOLISHED. *Continued.*

Township.	County.	System as it affects Statute Labor.	Year change was made.	No. of Road Divisions.	No. of Road Commissioners or Overseers.	Special Road Commutation Rate.	Remarks.
Stafford	Renfrew.	Abolished	.....	3	3	2½ millison \$1.00 assessment	See page 27.
Stamford	Welland	Commuted.	1896	.....	.....	50c. per day.	See page 27.
St. Joseph	Welland	Wholly commuted.	1902	.....	3	75c.	See page 26.
Tarleton	Algoma	.....	1903	4	4	\$1.00	See page 27.
Tecumseh	Simcoe	Abolished	1903	6	6	.....	See page 27.
Tekummah	Northan District	Wholly commuted.	1902	2	2	80c.	See page 27.
Thorah	Ontario.	.....	1902	.....	1	50c.	See page 27.
Thorold	Welland	Nearly all	.....	73	73	75c.	.....
Thornhill	Simcoe	Wholly	1904	.....	.....	50c.	.....
Tossonond	Essex	1-5 of Tp	.....	.....	.....	50c.	.....
Tibbity, N.	York	Abolished	1898	2	.....	.....	See page 27.
Toronto Gore	York	Wholly commuted.	1898	22	22	75c.	See page 28.
Vaughan	York	.....	1903	7	7	75c.	See page 28.
Walpole	Holdamand	.....	1903	7	7	\$1.00	See page 28.
Watt	Midlosex	.....	1902	4	4	45c.	See page 28.
Westminster	Midlosex	.....	1902	2	2	75c.	See page 28.
Westmeath	Renfrew	.....	1900	10	10	60c.	See page 28.
Whitby	Ontario	Partly	.....	37	37	50c.	See page 28.
Whitby, E.	Ontario	.....	1897	.....	.....	75c.	See page 28.
Whitchurch	York	Wholly commuted.	1900	14	14	\$1.00	See page 28.
York	York	.....	1902	101	101	50c.	See page 29.
Zorra, E.	Oxford	.....	.....	.....	.....	.....	See page 29.

public roads and bridges within his division, in so far as the commutation and other moneys belonging or appropriated to his division will enable him to do so, subject always to such written instructions as he may receive from the council, or from the road and bridge committee of his division.

It is of the greatest importance that the commissioners should be men of good judgment, practical, with ability to direct labor to advantage. The selection of suitable men as commissioners is of the greatest importance, as upon them will largely depend the success of any system adopted.

Work is distributed throughout the different sections of each road division as evenly as possible, always endeavoring to make the roads permanent, giving preference in this respect to highways most used by the public.

not only to separate the work of the overseers, but also to assist in adjusting and distributing the expenditure. Any method which seems to unfairly concentrate expenditure on a few roads will meet with disapproval.

The council should constitute itself a "Road and Bridge Committee" to suit the road divisions, in order that the road overseers may consult the proper councillors as occasion arises, with regard to details of the work.

Work for the grading machine should be staked out in advance by the overseer, so that the several pieces can be taken up consecutively. Otherwise much time is lost in moving the machine from one part of the township to another. The grader should start work early in the spring, and be kept continuously in operation until the season's work is completed.



Stone Arch in Dundas.

A common objection raised by ratepayers when commutation is proposed is that they fear that the council will not distribute the expenditure equitably. Anything like favoritism in this respect will create dissatisfaction, and cause a desire to return to the old system. When the new system has become well established, when its benefits have become apparent, when the ratepayers have learned the advantage of doing permanent work, they will not then raise the same objection to a concentration of the expenditure, as each will know that, with the extension of permanent roads from year to year, his own turn will come in a substantial manner.

The division of the township is made

The usual road appropriation is made from the general funds of the township, this to be used for the purchase of tools, machinery and materials, for small jobs and contracts, for more permanent work on heavily travelled roads, providing gravel or broken stone, for doing special work on hills and cuttings, and the more general class of improvements that are of service to the township as a whole.

The residents of the township are employed to do the work, provided they come properly equipped, and will do a fair amount of work, preference being given to the ratepayers of the division in which the work is being done, in order that as many as so desire may have an op-

portunity to earn back the amount of their commuted statute labor.

Work is paid for in cash if desired, but preferably by cheque, where a bank is convenient, payment to be made in accordance with the pay roll submitted by the road overseer, accompanied by necessary vouchers, and such information as may be considered necessary.

A general plan for road improvement should be laid down by the council for the commissioner to follow.

This plan should specify the width to be graded, width and depth of road metal, character of drainage, etc., of all roads.

All roadmaking machines should be under the care and direction of the road commissioner.

The same men and teams should be hired, to operate the machinery, for the entire season and from year to year if possible, as they become proficient and do better work. This applies particularly to the operation of a road grader, stone crusher or roller.

The council or commissioner appoints foremen, in different parts of the township, to collect the necessary labor, and act promptly, when roads are blocked with snow, the men employed to be paid in cash by the council.

## TOWNSHIP REPORTS.

Reports from the clerks of municipalities in the foregoing schedule, where new methods and systems are established, are as follows.

### Ancaster.

The whole of the statute labor was commuted in the year 1898 at 50 cents a day. The township is divided into twenty-three road divisions, an overseer for each division. By the reduction of overseers, better roads, and the fact that every ratepayer contributes towards the keeping up of the roads, the change has been beneficial. Some members of the council advocate the reduction of overseers to two road commissioners on yearly salaries.

### Barton.

The whole of statute labor is commuted, and has been since the year 1892. There are nine divisions, each under an overseer. The commutation rate is 20 cents. The change has been beneficial in every respect. Our people would not think of going back in the old ruts.

### Bertie.

Statute labor has been commuted since 1901 at 75 cents per day. Originally there were two divisions, but later the township was divided into three divisions, with one commissioner over each. The change has been decidedly beneficial, in permanent work on the roads, and in compelling every ratepayer to bear his just portion of the cost of road improvement. It is proposed to appoint three or four pathmasters in each of the six polling sub-divisions, whose duties (under the commissioner) will be to keep roads open in winter, and attend to emergencies.

### Binbrook.

Statute labor is commuted in this municipality at 50 cents per day. The change was made in 1896, and has remained so ever since. There are nineteen road divisions, and an overseer for each division. I think if it were not for the necessity of keeping roads open in winter, there would be a smaller number of overseers appointed—probably about half that number. I think the change has been very beneficial in that there is a more uniform system of doing the work, and in being able to place the work where it is most required. I am not aware that any change is proposed in our present system of road management as it now stands.

### Cavan.

Statute labor was commuted in 1902, when the reeve and councillors acted as commissioners, appointing overseers in the respective wards allotted to them, and combining sometimes two or three of the old road divisions under one overseer, but this left too much for one overseer to look after in the winter time, consequently in 1903 they increased the overseers to 47. The township is now divided into 47 road divisions, and the reeve and the four councillors are commissioners, who in certain wards appoint overseers in the different road divisions. The commutation rate is seventy-five cents per day, giving parties the privilege, if the wish, to put in their statute labor as usual, giving them cheques for work done, which they present to the collector, who deducts it from their taxes. Statute labor is charged against the property the same as other taxes, with the said privilege of paying it in work on the road



divisions, where their property is situated. The change is beneficial in that the property is charged with the statute labor, and it has to be paid for or put in as already mentioned. For ten hours' work a man and a team is allowed \$3.00, or 30 cents per hour, and a man is allowed \$1.25 for ten hours' work, or 12 1-2 cents per hour. Overseers are allowed \$1.50 for ten hours, or 15 cents per hour. More work is done and the roads are becoming better for traffic.

We have a grader, which works in different parts of the township where most needed, and a man is employed to run it, at \$1.50 per day. Teams are paid \$3.50 per day. We put in concrete culverts instead of the old wooden kind. We purchase cement and have a man employed to make them.



Taken in March. The side roads are axle deep with mud.

### Colchester, North.

Last year statute labor was commuted at 50 cents per day, and the change seemed fairly good, but there was a feeling that the abolition of statute labor would be better, and at the beginning of the year a by-law was passed abolishing it, the roads and bridges to be kept in repair by a general rate. Last year the township was divided in five divisions, each member of the council taking charge of one. I do not know how it will be divided this year, but think it will be in much the same way.

### Derby.

Statute labor was entirely abolished in 1902, pursuant to sub-section 6 of section 561 of the Municipal Act. The township is divided into four road divisions, with a member of council as commissioner for each—the reeve as commissioner for boundary roads or town lines. There is no commutation or special rate; all expenditure on roads being accounted for in the regular

road and bridge account. The change has been beneficial, first, by it being the means of introducing a more uniform and systematic system in road-making, and, second, saving the waste of energy and money heretofore expended. Whilst there are a considerable number of chronic grumblers, yet, there has been no substantial proposition made for a change.

### Downie.

Statute labor was abolished in toto in 1902. Commutation at 60 cents per day was tried for two years, but did not seem satisfactory. There are five road divisions, and each division is superintended by a councillor. As to benefit resulting, there is a difference of opinion. Some think the old statute labor is better than having the same abolish-

ed. There is a great deal of selfishness. The fellow that has a gravel pit in his beat no doubt can keep that particular beat in better condition than by abolishing it, but the other fellow that lives three or four miles from a gravel pit certainly gets better roads by the new than the old system.

### Dumfries, South.

At last nomination some wished to go back to the old system. On putting it to a vote of the meeting only two voted for the repeal of the by-law.

### Elizabethtown.

This is a large township, 10 x 15 miles. There were 74 road divisions, a pathmaster for each division. In 1901 the council, by a by-law, allowed the pathmaster in each road division to use the statute labor to furnish and pile 12 cords of stone; after that was done, to work out the balance of statute labor in the division, and the township paid for crushing the twelve cords. That gave fairly good satisfaction, but

some wanted the whole commuted. In 1902 the whole statute labor was commuted at 50 cents per day, and the township divided into six road divisions, and a commissioner appointed for each at \$2.00 per day. This did not satisfy the ratepayers, as the work was not equally divided. In 1903 a by-law was passed, making it 75 cents per day, and ten road divisions, with a commissioner for each. There are more complaints now than there ever was before. The commissioners' costs are considered to be taking too much of the money, and some of the roads are neglected altogether, and all ratepayers are dissatisfied. I am unable to state what the present council intends to do. We have a whole new council this year.

### Eramosa.

Statute labor was commuted (at 50 cents per day) in 1902, with four road divisions. The rate-payers are quite satisfied with the change, so far as the commutation of statute labor, but the council have appointed themselves road commissioners, which is not satisfactory. There is a growing feeling in favor of appointing a qualified "road inspector," making the position permanent to a good man.

### Etobicoke.

The statute labor on streets in villages and in thickly populated parts of the township is commuted—has been for some years. The council are adopting the system now of commuting any road division on which the statute labor has not been satisfactorily performed the previous year. In the farming districts we still retain the ordinary statute labor system. The commutation rate is one dollar per day on an amount of \$500 and less, \$1,200, 2 days; \$2,100, 3 days, and so on.

### Flamborough, East.

Our township if divided into four subdivisions. In 1900 the statute labor was commuted in division one, which is nearly altogether a garden district, and last December a by-law was passed commuting labor in the whole township. Division one has two overseers. The rest of the township is to be looked after by the council, divided into twelve road beats. Work is to be estimated and let by tender. The commutation rate is fifty cents per day. In division one the roads are in far better condition, and statute labor was commuted there at 55 cents per day until last year.

### Flamborough, West.

Statute labor in this township is commuted. The change was made in 1902, and we have had two years under the new system. The township is divided into three road divisions. There are three road commissioners. The statute labor is commuted at 50 cents per day. The change has been beneficial. There is a more uniform style of road, and a better chance of fixing up bad places. Under the old system of road divisions, and statute labor, where the roads were bad the statute labor was scarce. No changes have been proposed, but we are trying to hunt information as to whether it would be better to have the management of all the roads under one commissioner.

### Fullarton.

Statute labor was abolished in 1901. There are five road divisions, each under the supervision of a member of the council. A special rate of 1-2 mill on the dollar was levied in 1901; and 2 3-4 mills last year. We now get far more gravel put on, and it is put on where most needed. Formerly roads near a gravel pit got too much, and those far away too little.

### Gloucester.

Statute labor was commuted in 1901 at 50 cents per day, and in 1902 and 1903 this rate was reduced to 35 cents a day. In 1901 there were five road divisions, the councillors acting as commissioners. In 1902 two commissioners were appointed, and in 1903 one commissioner was appointed. The five divisions are still retained, and the old statute labor divisions are still used to base expenditures. The change has been better in every way—more work for less money—less patronage and less favoritism—owing to better machinery in general use. As the roads are graded, we look now to crown them with stone and gravel. We have been manufacturing our own tile for culverts for three years, and good results are beginning to show.

### Goulburn.

Statute labor was commuted in this township in 1901. The township is divided into four divisions, and two road commissioners are appointed. The commutation rate is sixty cents per day, which will likely be increased—being rather little in comparison to price of labor. The change has been very beneficial—having got more work done, and done in a substantial manner, and likely



Bridge over R. Thames between Elgin and Middlesbrough.  
Span, 240 feet; roadway, 100 feet; concrete abutments, steel superstructure, concrete floor.



to last a good while; also done a good deal cheaper than in statute labor times.

### Grey.

The council intends to do away with statute labor, probably this year (1904).

### Grimsby, South.

Statute labor was commuted in the Township of South Grimsby in the year 1901. Our township is divided into three road divisions, and one road commissioner is appointed for each division. The commutation rate is 65 cents per day. There is more labor expended on the roads, and to better advantage than under the old system.

### Grimsby, North.

A by-law was passed on the 7th day of April, 1892, commuting statute labor in this township. There are two road divisions, one commissioner for each division. The commutation rate is 50 cents per day. Much more work of better quality is accomplished.

### Guelph.

The council passed a by-law to abolish statute labor in the township in 1902. The township is divided into four divisions, and a councillor appointed commissioner in each division, with the Reeve to have a general oversight of the roads and bridges, the commissioner to confer with him as often as may be necessary. The change is thought to be beneficial, still from various causes it may not have been so successful as the advocates of the new system may have wished; the principal cause being the higher price paid for contracts than formerly, but the ratepayers do not appear that they should return to the old statute labor system. A road grader has been used in the township for four or five years, and now the council contemplate the purchase of a rock crusher.

### Hamilton.

A by-law was passed in the month of March, 1903, commuting statute labor in the township of Hamilton. The number of road divisions remains the same (five), and the members of council are the road commissioners. The commutation rate is forty cents per day. A large majority of the ratepayers are satisfied that it is a move in the right direction. As it was before, some divisions did good work and others little or nothing. The change has been beneficial in other ways, but this being the first year there is room for improve-

ment. There is some talk among the council of having two commissioners appointed, outside of the council, but no action has been taken as yet.

### Hawkesbury, East.

On the 20th of March, 1902, the 4th and 5th concessions road, about 12 miles long, commuted statute labor. It is divided in three road divisions, east, centre and west divisions, and one road commissioner in every division. The commutation rate is \$1.00 per day. The change has been very beneficial, and we have now a splendid road from here to Vankleek Hill, which is a distance of ten miles. We have bought an engine, a stone crusher, and a road grader to do this work. We are well satisfied with the improvement made in a couple of years.

### Huntley.

Statute labor was abolished in Huntley Township in the year 1903. One road commissioner was appointed, and he appointed an assistant. The commutation rate is sixty cents per day. The change is considered beneficial.

### King

A by-law was passed on the 28th day of February, 1903, commuting statute labor for the township of King. During the spring and summer months, more especially the spring months, great imaginary dissatisfaction prevailed, but as the year advanced and the ratepayers realized the situation, more favorable reports came in, and at nomination, when it was expected every conceivable fault would be found, not a word was said. True, all are not satisfied, and never will be. Even in this enlightened age some believe, and some do not. Our township is divided into ten polling subdivisions. The five members of council are the road commissioners, with two polling sub-divisions allotted to each, who in turn appoint as many overseers as the circumstances require. The commutation rate is 60 cents per day; some have thought it should have been 75 cents, and, in the near future, to lower the rate. As the change has taken place so lately, the question of benefit will be more easily answered later on. However, allow me to relate one instance: In one or two road divisions, under the old system, where for one or two years no statute labor was performed, said ratepayers had their commutation tax to pay this year with the rest of the township.



### Kitley.

In polling sub-division No. 2, statute labor was commuted at 65 cents per day in the year 1902. The rest of the township remains as it was. The commuted section is about one-quarter of the township. There is one commissioner appointed for the commuted section, and there is an old county road running twelve miles through the township, which was given over to the township, and is now maintained by direct taxation. There is also one commissioner appointed for this road, and other township grants which may be given on other roads. They are building more miles of road, and better roads, in the commuted section than anywhere else in the township. No change is proposed, unless it would be commutation for the whole township, the same as it is in polling sub-division No. 2.

### Leeds and Landsdowne Rear.

Statute labor was commuted in this township in the year 1901, and is giving very good satisfaction. The township is divided into five divisions, one commissioner in each of the divisions. Our council is of the opinion there are not enough commissioners, as labor is so scarce. The commutation rate is 75 cents per day. Our council is of the opinion that it is not enough, as the value of labor has been raised so much. The change has been beneficial by getting more work done, and a better class of work. The appointment of more commissioners is proposed, and of getting better machinery for road building.

### Logan.

Statue labor was entirely abolished in the whole township in the year 1903. The township is divided into five road divisions, and five road commissioners were appointed. No commutation or special rate is charged for improvements on roadways; the same is paid out of the general fund of the township. The benefit comes in this way: In the eastern part of the township gravel is somewhat scarce, and not of good quality, consequently the people had not as good chance to improve the roadways, whereas in the western part there is more gravel and of a better quality, therefore, under the present system, the work will be more equalized and will be more systematically performed.

### Malden.

Statute labor was abolished in 1890. Our council divide the township into four divisions for their own convenience,

and look after all the road work. There is no patch-work; water is carried to its proper outlet; roads are gravelled by the mile; all work is done on a larger scale and in a more thorough manner, because it is done by practical workmen, and not by farmers and their sons.

### March.

Statute labor is commuted at 50 cents a day, the change being made in 1903. There are four commissioners, and it is proposed to have the roads properly graded up as soon as possible, as the old style of road making by statute labor has played out. The council propose to buy a road grader, and hire teams to work by the day under a competent overseer, and have the roads properly graded up as soon as possible, so as to prepare for gravelling, as there are several gravel pits to be had in the municipality convenient to the leading roads.

### Medora and Wood.

Statute labor is now abolished, the change being made in 1902. Ratepayers have the privilege of working on roads at rate of wages going—from \$1.50 to \$1.75 per day. Very few take advantage. In 1902 there were nine divisions in municipality, in 1903, eleven. The commutation rate is \$1.00 per day. The change has been beneficial. Work is performed—which it often was not under the old system. The roads are improving.

### Nelson.

Statute labor was commuted in the year 1900. The township is divided into two divisions, the Old Survey and the New Survey of Nelson. The commutation rate is 50 cents per day. I think the change has been beneficial. Road commissioners being continued from year to year, carry on the same system of road improvement.

### Niagara.

Statute labor was abolished in 1903. One overseer or commissioner was appointed for 1903, but it is the intention of the council to appoint two commissioners for 1904. I believe, one for north and one for south end of township. Fifty cents per day was the rate for 1902, but in 1903 statute labor was abolished, and the amount required for roads and bridges was collected in the general tax of township. It has given the township better roads, and bridges are kept in better repair. It is proposed to take about four of the leading roads running north and south

in the township and complete them, and put them in good permanent shape, I believe.

### Norwich, South.

The by-law to commute statute labor was passed in May, 1901, at fifty cents per day. There are fifty-five road divisions, and fifty-five road overseers are appointed. The commutation rate is fifty cents per day. The change has been beneficial when the parties take an interest in it. But when they seem to want to throw cold water on it (and I am glad to say in not many instances) it has not proven so beneficial. We have been running the statute labor in this way. We collect in the fall fifty cents per day for each day a ratepayer is assessed. I separate the road divisions, and upon ascertaining the amount due each division I send notice to the overseer, who warns the men on his beat that he will do a certain piece of work, and that he will pay a certain amount for a day with team, or a man with shovel, as the case may be. If the ratepayers in the division wish to do the work, he pays them for the amount they do. If not, he hires some man to do the job, and pays for it. When done he makes his return to me of how he has appropriated the money, draws it in lump sum up to the amount due the division, retaining \$3 for his services. This worked very well for a couple of years, and you could see a marked improvement. In 1903 help was very scarce on the farms, consequently farmers would not turn out to do their statute labor, but would say they did not have to. As we had not made any provision for a case of this kind, some of the divisions did not get any done as there were not enough jobbers and contractors in the township to do all the work. It is proposed to run along this way for the present year, and I think next year will see the township divided in four or five sections, and a commissioner over each section, who will look after the work, and cost us no more than at present, paying fifty-five overseers \$3 each, or a matter of \$165, for no valuable return.

### Oliver.

In 1902 a by-law was passed in this township abolishing statute labor and doing the work under commissioners. The ratepayers have the privilege of working in their statute labor, if they wish to do so, at \$1.50 per day of ten hours. There are two divisions, and the commutation rate is \$1.00 per day. It is generally admitted that the work is done better and in consequence bet-

ter roads. Though the by-law was for two years, or until repealed, there is no word of repealing it.

### Orillia.

All statute labor has been commuted since 1900. The township, or rather, townships (we have practically two), are divided into six divisions, and six road commissioners are appointed. The commutation rate is 50 cents per diem, on basis of statute labor scale as formerly in vogue in this township. The money raised in this way would equal two and three-tenths mills (2 3-10) on whole assessment. Much more permanent work is done, and more uniform as well. Our people are almost a unit in favor of the change from statute labor.

### Osgoode.

Statute labor has been commuted in the seven eastern concessions since the year 1902. There are five divisions and five commissioners. The commutation rate is fifty cents per day. The change has been beneficial financially and an improvement to the roads. In commuted district comparatively little money is spent from general fund. No change yet proposed.

### Otonabee.

In 1901 the statute labor of four road divisions was commuted at 50 cents per day, 13 in 1902 and 3 in 1903, making 20 in all. There are 64 divisions on which pathmasters are appointed and 26 commuted divisions. The commutation rate is 50 cents per day in commuted divisions, and in other divisions, if not paid to the pathmaster by parties not wishing to perform their statute labor. If not paid to the pathmaster at time of doing the work, then they are charged \$1.00 per day. The money collected in commuted divisions and \$1,800 collected in the township for the roads is nearly all overseen by one man, with an efficient gang, with grader and scraper. Said overseer has been in the employ of the township about five years. The result is the roads are greatly improved, much better work being done, and more uniform than under the old system.

### Pelee.

On the 15th day of December, 1898, a by-law was provisionally adopted to abolish statute labor, and establish a fee in lieu thereof (50 cents for each day's statute labor, as heretofore imposed). A vote on this by-law was taken at the municipal election, and carried by a large majority. The by-law went into effect the next year, 1899, and is in effect to-day and likely

to be for all time to come. The by-law also provided for the levy and collection of a special rate in a general way for special improvement or work on any road deemed necessary. Township is divided into 13 road divisions, these again divided into four groups, and a road commissioner (generally a member of the council) appointed for each group. The commutation rate is 50 cents per day, ratio of service according to section 102 Assessment Act, 1897. The change has certainly been beneficial, more being accomplished in the improvement of the roads since the abolition of statute labor than in the previous history of the township. The money is spent principally in making as much permanent road as possible, and not here a little and there a lit-

eral repair of roads. Building of bridges, purchase of sewer pipe and plank, is paid for out of general fund of township. Besides, a grant is made each year for permanent road. We believe more work has been done than under the old system, but the price per day for commutation should have been at least 75 cents. With 75 cents or \$1 per day, we could have been able to make some permanent road each year, but 50 cents will not do it.

### Pickering.

By-law re commutation passed March 12, 1900. There are twenty-one divisions, with a commissioner for each. Five of these are village divisions. To keep the roads open during the season



A good road in Lanark.

tle. Principal roads receive first attention, and commissioners can start from a given point, when two may be continuing the improvement of same road. The work, where practicable, is sold by public sale, returns are more complete, and machinery and other implements on hand when wanted, etc.

### Pelham.

In the year 1900 a by-law was passed commuting all statute labor at 50 cents per day upon the assessment as per assessment roll. The rule adopted provides half day on assessment up to \$100. One day on assessment from \$100 to \$200. Two days on assessment from \$200 to \$300; and quarter-day on each additional \$100 from \$300 upwards. The township is divided in to two divisions, with one overseer over each division. The commutation money is applied only for grading and gen-

for sleighing in the divisions other than village divisions, a couple of overseers are appointed for each division to assist commissioners in keeping roads open, each commissioner and overseer having different roads to look after. The commutation rate is 60 cents per day. Twenty-one commissioners with a fair knowledge or roadmaking are more easily secured than 119 overseers as under the old system. Commissioners are gaining additional experience with each year, and doing better work and more of it. By commutation all have to pay; under the old system some escaped the imposition, others only half did it. Ratepayers employed on the work are paid the current wages, and work as if employed by private individual. A better and more uniform system of roadmaking has resulted. No changes in our system of road management are proposed at present, but many favor an engineer being put in



charge of township, with commissioners or foreman, in the different road divisions; or, perhaps, large divisions, subject to his orders and directions.

### Plummer Additional.

Statute labor was commuted in April, of 1901, throughout the whole township. Last year we had five road divisions and five road commissioners. This year we have six divisions. The commutation rate is \$1.00 per day. The change has been beneficial, in that work is more systematic—better organization to see that work is done.

### Portland.

In 1903 we commuted the whole, and the amount was expended by the council on the different roads. The commutation rate is 40 cents per day. The change has been beneficial. Those that did not perform any statute labor were made to pay. It is proposed to have the money laid out in each division where it belongs.

### Puslinch.

The by-law commuting statute labor over the township came into force in 1903. The township is divided into four divisions, as nearly equal as may be, and a commissioner appointed over each division. The commutation rate is fifty cents. Some good work of a permanent nature has been effected. Labor being scarce and wages high, the commissioners were not able to complete their estimates. A majority of the ratepayers wish to give the new system a fair trial.

### Rama.

All statute labor in our township of Rama was abolished last year, and the new system worked fairly well. Our township is divided into five school sections, and we appointed one road commissioner for each section. The commutation rate is fifty cents per day. But I have reason to say that it will probably be seventy-five cents for this year. At nomination our Reeve asked the question, and nearly all responded in favor of the new system.

### Reach.

Statute labor was commuted all over the township in 1903 by by-law. I may say that, with the exception of two divisions, the change has met with general approval. The township is divided into 15 divisions, each division under a commissioner or overseer. Each councillor has absolute control of the divi-

sions. The commutation rate is 60 cents per day, and is collected at the same time as the other taxes by the collector. The commuted statute labor amounted to \$2,488 for 1903. Commissioners are paid fifteen cents per hour, while actually at work; teams, with waggon or implement furnished, 30 cents per hour; laborers, 12½ cents.

### St. Joseph.

Statute labor was abolished in the township of St. Joseph in 1902. There are two road overseers, the township being divided into road divisions in 1903, but three road divisions in 1902, and three overseers. The commutation rate is 75 cents a day. It is beneficial, by being able to do the work where it is most needed, and the water carried away by drains instead of the patch-work done by our forty pathmasters.

### Saltfleet.

We passed a by-law commuting our statute labor in the township of Saltfleet in May of 1898. We divided our township into three divisions, appointed an overseer for each division, and supplied each division with a road grader. Our commutation rate is 35 cents per day. I may say it is too low, and the consequence is it has to be supplemented out of general township funds. We consider the change has been a good one here in Saltfleet. Our roads have been put in a very much better condition and at much less cost to the people. The matter is being considered whether it would not be better to reduce the number of divisions to two instead of three, as at present. It is generally conceded in our township that our roads have received more real benefit, and are kept in a better condition under the present system, than they did with double the expenditure under the old system.

### Sarawak.

Two wards was commuted about six years ago, and three wards two years past, and all the township last year, at 60 cents per day, and this new arrangement has come to stay. There are four divisions and one commissioner for each division. More work is done, it is better laid out, and consequently better roads.

### Sidney.

Statute labor has been commuted throughout township since the year 1900. Same number of days as called for in by-law before commuted. One road surveyor acts for the whole town-

ship. The commutation rate is 50 cents per day. The change has been very beneficial. Better roads, and work done under supervision of experienced men. No changes are proposed—very satisfactory.

### Stafford.

Statute labor was abolished in the year 1900. The township is divided into three road divisions, each division having a road commissioner. This plan would be very good but for the difficulty of getting good road commissioners. The road money is levied by a rate on the dollar of assessment, and amounts to about 70 cents per statute labor day. The roads are more uniform. Under the statute labor system each pathmaster had a different plan of road-making.

### Stamford.

Statute labor is commuted in two of the four polling sub-divisions. The change was made in 1896. In parts of the other two divisions it is also commuted, but not all. When the majority of the ratepayers on any road division request it the township commuted their labor. One division for each polling division, one member of the council acting as a commissioner in a division, with an overseer appointed by the council acting under his directions. The commutation rate is fifty cents per day. The roads in that part of the township where commuted have improved, at less cost, more than 100 per cent.

### Tarentorus.

Last year was our first as a separate municipality. We commuted the statute labor last year at \$1.00 per day. We are divided into four divisions, and have one road commissioner in each. The change was found very satisfactory, considering that we were late in getting properly organized.

### Tecumseth.

Statute labor abolished in year 1903. Township divided into six road divisions, and a road commissioner appointed in each division.

### Tehkummah

Statute labor is commuted in the municipality of Tehkummah. In 1890 it was commuted at 60 cents a day, and commissioners and operators of road machines paid out of the general funds, but that did not work well, as people could not readily see how the work was done in that way. In 1903 the rate

was 80 cents, and roadwork stood on its own basis. The township is divided into two road divisions, with a commissioner over each. Rate for 1903 was 80 cents a day, but I think a change will be made to raise it to \$1.00. This system of roadmaking is a great benefit in several ways. Road work is all performed and done in the right time of year, better roads built, etc. Dividing each division is proposed, and placing a councillor over each, to inspect the roads and advise commissioners where work should be done.

### Thorah.

Statute labor is commuted at 50 cents per day, the system being adopted in the year 1900. In the year 1902 there were two road commissioners appointed, and also 16 pathmasters. In 1903 one road commissioner and the same number of pathmasters as in 1902. There is considerable dissatisfaction owing to some of the old road beats not having as much money expended on them, nor so much work performed as under the old system. Those dissatisfied are now asking the council to go back to old system. I think under present system we have more uniform system of roadmaking and more permanent work.

### Tilbury, North.

Statute labor was commuted for part of the township, on Lake St. Clair shore, the 16th of April, 1898—on the whole township 21st September, 1903, the rule being 50 cents a day. There are six road divisions under the supervision of six road commissioners. It has been beneficial for the first move, and that has led to the abolition in the whole township. The roads were in a better state of repair, with less money and trouble. We propose to buy two new roadmaking machines.

### Toronto Gore.

The statute labor was totally abolished in the township in the spring of 1898. For commission work the township is divided into two divisions proper. Three of the councillors act as commissioners for the larger division, and the other two for the smaller. These are sub-divided into 20 divisions and overseers appointed in each. The duties of the overseer are to keep the roads open during the season of sleighing in each year and also to repair any sudden breach or giving way on the road. The original by-law specified 65 cents per day as special road rate, but at present the statute labor rate is not taken into consideration, but sufficient is levied

to keep the road in repair. The change is considered by the ratepayers of the township as a decided success. The roads are more uniform, and most of the work is done with road machine. There is a strong feeling for better roads, but the supply of gravel is about exhausted. At present the council are waiting to see what action will be taken by our county councillors with regard to the Government grant. That body seems to be rather slow in taking any action.

### Vaughan.

Statute labor was commuted in Vaughan township on April 20th, 1903, for the whole township. The council did not ask for public feeling by a vote, but merely passed the by-law which gave considerable dissatisfaction at the time. The township is divided into twenty-two divisions, with an overseer appointed in each division, the five councillors acting as commissioners for the whole township. Labor is commuted at 75 cents per day. The council think that more work has been done under the new system, but quite a large percentage of the ratepayers are still opposed to the change. No changes are proposed at present, as the council have decided to give it a fair trial. I do not think, however, that Vaughan will go back to the old system.

### Walpole.

The council in August last (1903) passed a by-law wholly commuting statute labor in this township. Recent municipal elections were fought on that issue, the old council winning out. There are seven divisions, with seven overseers. The commutation rate is 75 cents a day. The council purpose purchasing stone crusher and roller, and making a piece of stone road each year.

### Watt.

Statute labor is commuted, the change being made in the year 1903, at \$1.00 per day. Township is divided into seven road divisions, one overseer over each division. I think the change beneficial. The road work was all done in proper season, and our roads as a whole were never so good before. We have some kickers, but the majority of ratepayers are satisfied. No changes proposed, but it is possible there may be at our next meeting.

### Westminster.

The change was made in 1902. There are four road divisions and four road

commissioners. The commutation rate is forty-five cents per day. There are some complaints. In the first place, I think the rate is too low, and we have had two very bad wet seasons. There are a great many in our township who think it would be better to do away with it altogether, and raise the township rate. I know, myself, it would be more convenient for the commissioner.

### Whitby.

Statute labor was commuted in 1900, the rate being 60 cents per day. Township is divided into two road divisions, one emergency commissioner for each division to oversee needed repairs, who also acts as commissioner, with one member of council in spending commutation money. On the whole, this is beneficial by providing longer stretches of good roads on the leading roads of township. It would be better still if one or two good commissioners had supervision of the whole work, as a sort of permanent officer, with a view to greater continuity of action.

### Whitby, East.

Part of the statute labor is commuted in this township. Any road division can have statute labor commuted by petitioning the council to that effect, provided two-thirds of the ratepayers in the division sign the petition. The divisions are still left as laid out a number of years ago. The commutation rate is fifty cents per day. We get more work done for the money expended.

### Whitchurch.

When Yonge street was taken over by the municipalities, Whitchurch commuted the statute labor rated on the farms that fronted on Yonge street. This was done because King Township Council decided to keep up their portion of Yonge street by money grants. Then there are some small village lots adjoining Stouffville, on the north, that commute their statute labor, and expend the amount improving their street. We have 74 road divisions yet. We engage a man to run the road plough for a time in May and June. The commutation rate is 75 cents per day of eight hours. A good many of those that have to pay along Yonge street are opposed to the scheme. The majority of the ratepayers are opposed to any change. In 1903 it was almost impossible to get men to do jobs on the roads.

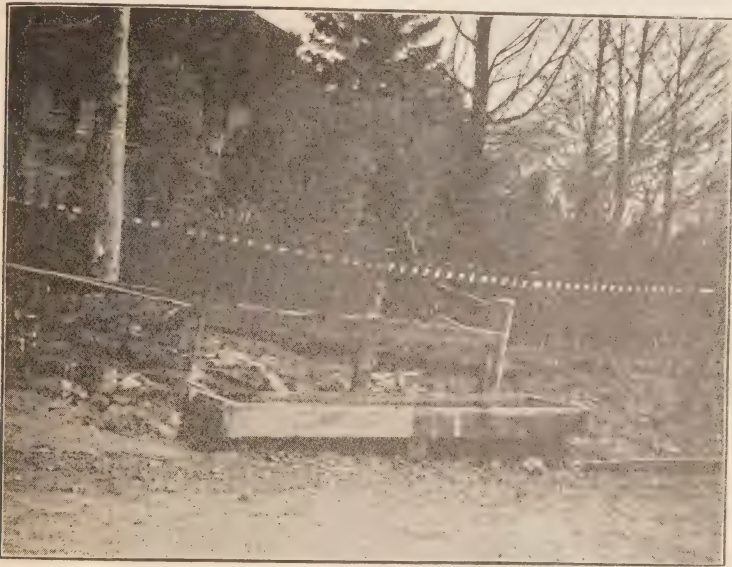


**York.**

Statute labor has been entirely commuted for some years. The movement for commutation commenced a number of years ago by commuting the labor in a small section of the township, which spread from time to time until the whole township was included. The township is divided into 14 "Commuted Statute Labor Districts," all under the supervision of the township engineers, who have a foreman for each district. Commutation rate is \$1.00 per day. The change has, I believe, been beneficial. It is claimed by the majority of the

**Zorra, East.**

Statute labor was partially commuted in 1898 to 1900—wholly since. The first scheme was to commute in road divisions where the majority was favorable. Road overseers were appointed as usual, and expended the commutation money, receiving 5 per cent. for their services. Then in 1901 it was all commuted, and in 1902 one commissioner was appointed for the whole township. In 1903 they went back to road overseers, 101 of them. Just now there are 101 road divisions, and the same number of commissioners or overseers.



A watering trough by the roadside.

ratepayers that more work is accomplished under the present system than in the old pathmaster days, and that the work is more systematic, uniform, and of a more permanent nature than under the old system. The council is at present considering a proposition to place the supervision of the work under the members of the council as commissioners, assigning a certain district to each of the four councillors, only employing the engineers when required on special work.

They are thinking of appointing five commissioners for this year, but will not know for some time yet. This is generally settled in March. The commutation rate is 50 cents per day, as per schedule enclosed. As to the change being beneficial, some say Yes, some No. As for myself, I favor four or five commissioners as being more economical, and securing better value for the money and more uniform roads. There is quite a feeling among the parties having small assessments to abolish statute labor altogether, and levy a general rate for road improvement.

## STATUTE LABOR COMMUTATION BY-LAW.

### Township of East Zorra.

*A by-law to commute all statute labor in the said township, at a uniform rate of fifty cents (50 cents) per day, and to provide for expending the same and other moneys on the public highways.*

Whereas the highways of this township have heretofore been maintained by statute labor, performed thereon under the direction of road overseers, supplemented by sufficient grants from general township funds, expended by the members of the municipal council, to meet all the expenditures connected therewith, and;

Whereas it is desirable that all statute labor in the said township should in future be commuted at the aforesaid rate, and the funds raised by such commutation, together with other funds which may be granted by the council of the township, should be expended by a commissioner or commissioners, to be appointed yearly by the said council.

Be it, therefore, enacted by the Municipal Council of the Corporation of the said Township of East Zorra, and it is hereby enacted:

1st. That from and after the date of the passing of this by-law, all statute labor to which any person (resident or non-resident), may be liable, in this municipality, shall be commuted at the fixed rate of fifty cents (50 cents), for each day's labor, and the amount of each person's commutation tax shall be added in a separate column, opposite such person's name in the collector's roll, and shall be collected and accounted for like other taxes, and shall be kept by the treasurer in a separate account, to be known as "The Commuted Statute Labor Account."

2nd. That the said commutations shall be levied on each assessment according to the following schedule, viz.: Not more than \$900.00, the sum of \$1.00; at more than \$900.00, but not more than \$1,000.00, the sum of \$1.50; at more than \$1,500.00, but not more than \$2,100.00, the sum of \$2.00; at more than \$2,100.00, but not more than \$2,700.00, the sum of \$2.50; and for every \$900.00 of assessment over \$2,700.00, or fractional part thereof over \$500.00, an additional sum of fifty cents (50 cents).

3rd. Every male inhabitant of this township, between the ages of 21 and 60 years (not otherwise assessed, and not exempt from the performance of statute labor) shall pay the sum of fifty cents (50 cents) as commutation for one day's labor, the same to be

paid over to the commissioner, or one of them if more than one be appointed, within six days of being notified so to pay, and if he refuses or neglects to do so he shall incur the penalty prescribed by the Assessment Act of the Province of Ontario.

4th. That the sub-division of the public highways in this township into road divisions, as at present, is hereby abolished, but the commissioner or commissioners, in expending the commutation moneys shall see that a sum as nearly equal as may be to that formerly expended in statute labor in each division shall continue to be so expended.

5th. That the council should yearly appoint one or more competent persons as commissioners to oversee the construction and repair of the highways, bridges and culverts, in and bordering on the municipality, and such commissioner or commissioners shall be governed by by-law and direction of the council, and shall hold such office during the pleasure of the council, and at such remuneration as may be fixed by the said council, or mutually agreed upon.

6th. That the clerk of the said municipality shall as soon as possible after the holding of the last Court of Revision in each year, notify the commissioner or commissioners of the probable amount of commutation money to be expended in each division.

7th. That the council shall notify the said commissioner or commissioners where to procure gravel, lumber, tile, culvert pipe, or other material to be used, and shall provide for his or their use all necessary books, pay sheets, notices, etc., required for the proper performance of his or their duties.

8th. That the said commissioner or commissioners are hereby authorized and empowered to collect the sum of fifty cents (50 cents) each from the persons mentioned in section No. 3 of this by-law, and to expend the same.

9th. That the said commissioner or commissioners are hereby appointed as inspectors under the provisions of By-law No. 496 of this municipality, and of the Act to Prevent the Spreading of Noxious Weeds, with full power to prosecute any party or parties violating the same.

10th. That the council may at any

regular meeting set apart such further sums of money as may seem required for the maintenance of the highways, and the commissioner or commissioners shall expend the same, as directed by resolution of the said council.

11th. That the treasurer of the municipality is hereby authorized to pay on the order of said commissioner or commissioners any sums which he may be directed so to pay by resolution of the council.

12th. That by-law No. 518 of this

township and any other by-law, or parts of by-laws, contrary to, or inconsistent with the provisions of this by-law, are hereby repealed.

Read a first and second time on the 17th day of March, A.D. 1902.

Read a third time and finally passed in open council this 25th day of March, A.D. 1902.

JAMES ANDERSON,

Clerk.

W.M. STOCK,

Reeve.



## COUNTY ROADS.

Road systems extending over a considerable area, comprising the more heavily traveled market roads, and maintained in accordance with a good standard, have been adopted as county systems, largely under the influence of the Highway Improvement Act of 1901. Counties establishing these systems are: Wentworth, Simcoe, Lanark, and Wellington. The Hastings system will be brought under the Act, while Carleton, Oxford and others are taking steps towards this end. Municipalities are notably conservative with respect to systems of road management. The statute labor system has remained almost unchanged for more than a century, in spite of its many defects and the manifest advantages that would arise by adopting more suitable township systems. It was anticipated that county systems would be adopted very slowly, and it is a matter of much promise that such counties as Wellington, Wentworth, Lanark, Simcoe, Hastings, Oxford, and others should receive the proposal so favorably.

The Act does not contemplate an extensive system of roads. The aim is rather to secure uniform and systematic work, to employ and properly operate modern and economical implements, to provide careful, constant, and methodical supervision and maintenance; to provide object lessons in the care and treatment of roads, and set examples for those having charge of the remainder. Where a county system is adopted,

no greater road mileage is maintained by the ratepayers. Whatever mileage is assumed by the county council merely relieves the township council to that extent. As a rule to combine the more important roads in one class under one management, with proper methods and tools for dealing with this special class of work, is a measure that will reduce the cost rather than increase it, and it will at the same time produce a better class of roads.

A large expenditure is not demanded from the municipalities taking advantage of the Act. The intention is to do the greatest amount of good by aiding the counties to help themselves. All the expenditure placed on roads will be spent in the county, and this returned, in a great measure, to those who contributed in the first place, together with the Provincial grant.

County roads are, for the most part, those benefited by the Act, and it is a means of requiring the urban municipalities to aid in the maintenance of the common highway, from which they derive a great benefit, without heretofore sharing in the cost. As an illustration, the City of Toronto, containing about one-tenth of the population and wealth of the Province, would ordinarily be entitled to one-tenth of the \$1,000,000, or \$100,000. None of this grant, however, is spent within the limits of Toronto, but all is spent on the roads of rural or township municipalities.



## A County Convention.

Wherever it has been proposed to form a system of county roads, and thereby secure the county's share of the \$1,000,000 grant set apart by the Legislature, it has been customary for the county council to call a conference of all municipal councils, or their representatives, within the county. At these conferences, the majority of which have been, by the request of the counties, attended by the Commissioner of Highways, the meaning and intention of the Act have been explained, and to some extent a plan of roads considered. A second conference has then been called to further discuss the details of the proposal before any well-defined plan has been reached. When this has been done, it rests with the county council to pass a by-law definitely laying down a system of county roads. A copy of this is sent to each township council within the county, and they have three months in which to consider it. Each council will, within the three months, report to the county council their acceptance of the plan, their rejection of it as a whole, or such alterations in the system of roads as would meet their approval. If a township wishes roads taken other than those proposed by the county, in case of failure to agree, the matter will be submitted to arbitration. If more than a third of the municipalities oppose the by-law as a whole, the question must be submitted to a vote of the people. If the by-law meets the acceptance of the municipal councils, or two-thirds of them, the county council may, at the end of three months, proceed to perfect their plans for the improvement of the roads. Under the Act as it now stands, county councils have until January 1st, 1906, during which to take advantage of the Act.

## The Councils Decide.

The highways to be assumed as county roads, the distribution of the expenditure upon these roads, where the work is to be undertaken, and similar details of management, are left wholly to the judgment of the county council and the municipalities interested. The actual improvements may be placed wherever they will be most serviceable and effective in bettering the condition of the roads, and the distribution of the expenditure must, therefore, be governed by local circumstances. What has been done would indicate that the county system of roads has been made to comprise about one-tenth of the road mileage within the county, but these have been selected wholly with a

view to local markets and the trend of travel.

It will be of advantage in most cases to have the roads connect and form a continuous system of county roads, but it is not necessary that they should do so. In some counties the trend of travel is all in one direction, leading to one market centre. In other counties the trend of travel is divided into a number of district centres. Nor is the trend of travel marked by county or township boundaries, but divided according to local conditions. The most important factor in determining the line of travel is, as a rule, the nearest or best market. These circumstances must be all taken into consideration in framing a county system of roads, and the aim should not be so much a connected system as a useful one. A reference to the maps of county systems elsewhere in this report, will indicate what Lanark, Wentworth, and Wellington have done in this respect.

## The Amount Expended.

The amount of money a council shall spend on the roads is not defined by the Act, except that, in case money is raised by the issue of debentures, these debentures shall not exceed two per cent. of the equalized assessment of the county.

This money, payable by the Government, may be drawn as the work progresses, and the rapidity with which it is drawn will depend upon the expenditure the county decides to make. It may be drawn in one year if a sufficient amount of work is done by the county. Or the work may be extended over several years, and the proper proportion of the money due under the Act will be paid from year to year as earned.

## The Roads Assumed.

The roads to be assumed must not be confused with any previous county systems which have existed, many of these having become of secondary importance, owing to the building of railways and the growth of new local markets. Only those roads should be selected which can make good their claim to being still the roads of greatest travel. This is a matter which county councils, with the advice of township councils, will undoubtedly view from a county standpoint, and by them the best possible selection will be made, so that it is not a matter upon which the Act places any restriction.

The roads to be assumed under a county system should, however, be

those which are most used by the public, and which will best serve the requirements of the people in each section. One road in each township, or several roads, or part of one road, or parts of several roads, may be selected. As a general thing, they should consist of what are now the most heavily traveled roads in each township leading to the market town or village of the district.

### Statute Labor.

Statute labor assessed against the lands fronting on the improved roads may be commuted by the township council in which the lands are situated, if the council so desires. The property adjacent to the improved roads will undoubtedly derive a direct benefit which should render it liable to such a measure. The commutation money will belong to the township, to be used as the council may direct. A natural step would be to use it in improving other roads in the township, while some townships propose using it in paying the rate levied against the township for county roads.

### Grants to Townships Not Benefitted.

Most counties, and the councils of the various municipalities, agree as to the general principles of a county road system and the benefits that arise therefrom. But certain details in adjusting a system to meet the local circumstances in a few cases appear to create the chief difficulty in the acceptance of a county system of roads. To meet such cases, the Act provides that the county council may make a specific or annual payment to township councils not benefited by the proposed county road system, to reimburse them, wholly or in part, for the amount they pay annually to the county road fund. The county council may also make grants to towns and villages in certain instances.

### Reasons for County Road System.

County maintenance of roads aided under this Act will, it is believed, be most satisfactory. Were township councils to maintain these roads and all other roads in the township, they would be influenced after the first expenditure to make future municipal expenditures on other roads, and those which have received Government aid will be neglected. Under such circumstances the first outlay would not accomplish its chief mission.

County councils, on the other hand, would have charge of these few leading roads only, all of the one class, so that the most economical but efficient system of maintenance could be adopted with respect to them.

Under a county system, an experienced and properly qualified man will be employed to have constant supervision of the work, and a well organized corps of men can be employed to work on the roads, building and keeping them in repair. As with other employments, they become experienced and do better work, and in the matter of repairs are ready to make them as soon as signs of wear appear.

Under county control, modern machinery, too expensive for individual townships, can be purchased and handled to advantage, an experienced operator can be employed for each implement, and a better and more uniform class of work will be secured.

A greater cost to the individual citizen need not be feared, as no greater road mileage is to be maintained. The effect of a county system is merely to group the most heavily-travelled roads under one management, where they can be most economically maintained.

By a county plan, uniformity of work and system will be immediately secured throughout the various municipalities. Under township control it is by no means likely that the various townships would act in unison; at best there must be delay, while here and there a township will not take advantage of the Act.

Under a county system towns and villages in the county contribute a fair share of the cost of keeping up the leading roads. There can be no question as to the justice of requiring the towns and villages to contribute towards the cost of this work. Towns and villages are benefited by the improvement of the county roads approaching them, and the county should not hesitate to assess them. This can be done through the county council only. It is not the intention that the money should be spent in the towns, but that it should be spent in the townships. Where the county has to raise two-thirds of the total amount, such a percentage of this will be contributed by the town as to make their contribution, together with the Government grant, equal to about one-half of the cost of the work. Where the townships, instead of the county, take advantage of the Act, towns and villages cannot contribute in this way. Under a county system, a portion of the cost of road-building is levied, in the county rate, against the towns and villages

within the municipality for road purposes. At the present time under township systems, the farmers bear the entire cost.

The total assessment of the townships of the Province is \$458,811,926, and of the towns and villages, \$129,771,310, the latter being 22 per cent. of the combined assessment of towns, villages, and townships. Thus, under the average county system, the towns and villages would pay 22 per cent. of the amount raised by municipalities for construction and maintenance; whereas under the township system the township cannot obtain this assistance.

Taking the Province as a whole under the county system, for every \$1.50 spent on constructing the roads, the Province pays 50 cents, the townships 78 cents, the towns and villages 22 cents. Where the townships individually take advantage of the Act, the Province pays 70 cents and the townships \$1.00.

It is impossible under a township organization, in the case of heavily-travelled roads, to levy the necessary taxation equitably, or employ the most economical and at the same time serviceable system. The trend of opinion has turned towards collecting the most important roads of each county, placing them under the management of the county council. By such means, road-making can be placed on a more businesslike basis, and, consequently, greater efficiency is secured. It provides for a more equitable system of levying the cost, for a better use of modern machinery, and for a higher grade of oversight and workmanship. At the present time township councils are unable to maintain the roads by statute labor, and are in consequence compelled to make annual appropriations of money from the general tax. This money, in the main, is spent on the roads which would comprise a county system, but owing to the contracted character of the township system, township councils cannot expect to apply this expenditure to the greatest advantage.

### Standard Required.

Expensive work is not required. The nature of improvement undertaken by any county must necessarily depend on many local circumstances—the work already done on the roads, the road material available, the extent of traffic, and similar details. A fixed standard of road to be constructed is not defined by the Act, nor will it be controlled by the Department of Public Works.

It will be necessary for the county councils to submit a report showing what is proposed, but so long as it embodies the elementary principles, proper drainage, crowning, and, as far as possible, uniform grading, and a systematic application of material, it will meet requirements.

Special provision is not being made for Government inspection. The certificate of the county commissioner or engineer as to the completion of the work, the manner of doing the work, and expenditure of money, will be accepted. It is desired that the services of the Public Works Department in this respect will be advisory rather than that of inspection. Any consultation or assistance of this nature rendered by the Department will be without expense to the municipalities.

The regulations referred to in section 6 of the Act are, therefore, very general, and are the following :

All road improvement under the provisions of 1 Edward VII, Chapter 32, is to be done by a capable commissioner appointed by the council.

A plan of the roads to be improved, a report as to their present condition, and approximate amount of travel over them, specifications showing what work of improvement is to be made, together with an estimate of the cost, will be submitted to the Department of Public Works for approval. The improvements must be of a character suited to the requirements of the locality, and may consist of: (a) Resurfacing and substantial repairs on old gravel or stone roads; (b) Draining and grading the roads; (c) Draining, grading and gravelling the roads; (d) Draining, grading and metalting the roads with broken stone. The plans and specifications shall, as far as practicable, provide as follows :

1. The steepness of hills should not exceed a rise of one foot in twelve.
2. The roadway graded for traffic should be in the centre of the road allowance, and should have a uniform width of 24 feet between the inside edges of the open ditches. The width of the roadway on cuts and fills should not be less than eighteen feet.
3. Side slopes in cuts and fills should be one and one-half feet horizontal to one foot vertical.
4. The crown given the newly finished roadway should be uniform, and have a rise of one inch to the foot from the edge of the ditch to the centre of the road.
5. When gravel or broken stone is used, it should be placed to a width and depth sufficient to form a serviceable road, having due regard to the character and extent of the traffic.



6. The gravel or broken stone used on the road should preferably be obtained in the vicinity of the road, but must be of good quality.
7. As a rule the gravel or stone should not be of a less width than eight feet, nor of a less depth in the centre than nine inches.
8. Where roads have heretofore had gravel or broken stone placed on them, they should be repaired by cutting off shoulders, shaping with a grader, and adding a sufficient amount of gravel or broken stone to fill ruts, depressions, properly crown and make a road sufficiently strong to accommodate the travel.
9. The gravel or broken stone placed on any road should be thoroughly rolled, otherwise the grade should be maintained by careful raking or scraping until compacted by traffic.
10. An open drain should be made at each side of the road, and given a sufficient fall to a free outlet.
11. Durable sluices and culverts should be built when necessary.
12. Tile underdrains should be laid, so as to carry away excessive sub-soil water, lower the water-line, and secure a dry roadbed wherever a moist, damp, or springy condition of the sub-soil exists.
13. Modern machinery and implements should be used, as far as possible, to secure the greatest results from the expenditure, and to provide the best work.
14. Where, owing to special local conditions, any departure from the foregoing regulations may be desired, upon application of the council, an examination of the road or roads in question will be made, free of charge, by an engineer of the Public Works Department for the purpose of deciding upon a suitable plan.

## WENTWORTH COUNTY ROADS.

Report by Edward Kenrick, Warden.

When Wentworth County proposed, under the inducement of Government aid, to formulate their scheme for an improved system of county roads, the conditions were, in some respects favorable to the undertaking. The City of Hamilton, as the county market town, formed a common centre, towards which radiated, as spokes to the hub of a wheel, some 38 miles of well-travelled

macadam roads. Here was a starting point, and the fact that all these roads were then in the hands of toll road companies, indicated the necessity for ascertaining the expense of releasing them from tolls, as the first order of proceedings. Also in Wentworth, the county road movement was no novel experience, the county already having at this time about 38 miles of county roads. Of this mileage of roads, 25 miles, after having been toll roads for many years, had but recently been made free, whilst only so lately as within the last five years the county had been put to the expense of nearly \$30,000 in acquiring and partly constructing the remaining 13 miles.

These county roads, under the management of the county council, had supplied much useful information, both as to the cost of constructing new roads, and as to, what was of equally great importance, the cost of maintaining them, when constructed, in proper condition of repair. Reasonable facilities for furnishing the requisite material for the construction and repair of roads offered no serious obstacles to the inception of the scheme, although it is now conceded that an underestimate was at that time made as to the cost of construction of the proposed new roads. Stone of fair quality for macadam purposes was reported to be readily available for the roads proposed to be constructed, more particularly in the North Riding, whilst for the roads in the southerly districts the extreme length of the longest haul was estimated not to exceed eight or ten miles.

There being no wide streams nor apparent need for extensive engineering works within the county, provision was not seemingly required for any special outlay on these accounts, yet Wentworth's first year's experience was—the unexpected, which always happens—the threatened speedy collapse of the only trestle work bridge in the county, which necessitated its immediate replacement with a permanent structure, involving an outlay of over \$4,000.

Under such apparently favoring conditions, seven commissioners, representing six county divisions, were appointed by the Wentworth Council to take the county road matter in hand, and it should be stated, by way of encouragement to those who may hereafter be called upon to undergo a similar experience, that they achieved final success, only after having oftentimes, during the 18 months which intervened before the matter was submitted to the ratepayers, been almost driven to despair by the many difficulties with which they were from time to time confronted

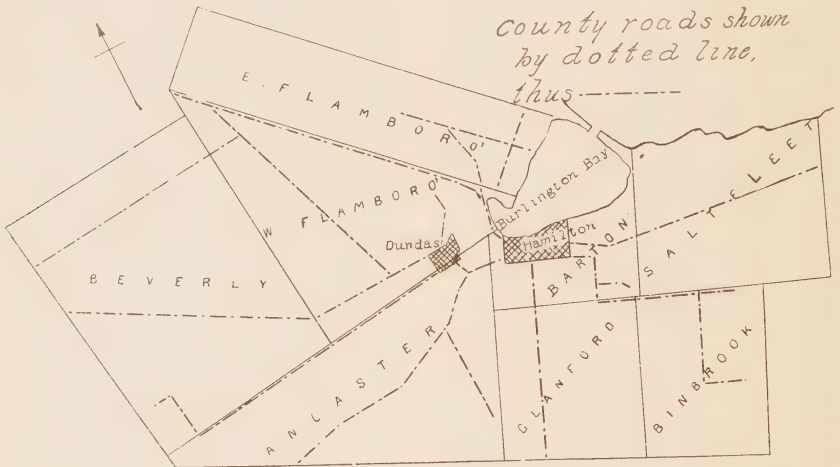
in the attempt to reconcile the various conflicting interests of their several districts.

It might also here be mentioned that the County Commissioners, in working out the details of their scheme and in estimating the proportion of expense, which each municipality would be called upon to contribute, took into careful account not only the benefits which the proposed purchase or construction of each road would confer upon the particular municipality within which such road would be situate, but the benefits also which the purchase or construction of such road might be reasonably expected to confer upon all other municipalities in the district.

The following are instances of difficulties of equalization, which the commissioners were required to take into

liberal consciousness of favors already received, gave handsome majorities in favor of the scheme. In two county districts local municipalities had a few years previously purchased from the Government some 15 miles of macadam roads, which they had since kept in repair. In these cases it was considered reasonable, and provision was made in the scheme to allow compensation (\$6,500 being appropriated for this purpose) to these municipalities when inviting them to contribute their further quota to the general scheme.

Many and varied were the objections to the scheme, which seemed serious enough at the time, but which, viewed in the light of after experience, lost much of their weight. For instance, from the noticeably large increase in the public travel on the Wentworth roads,



Wentworth County Roads.

account, when endeavoring to allot to each of the several local municipalities its fair proportion of improved road mileage and expense: Of the 38 miles of existing county roads, 27 were situate in the North Riding; two townships, also in the North Riding, had unquestionably received the almost exclusive benefit of at least \$25,000 out of the \$30,000 recently expended on county roads. In one township in the North Riding, the leading roads, including one road, running its whole length of 14 miles from north to south, were at this time already county roads. It was a moral impossibility that municipalities, situate like the above, should in the proposed distribution receive their full equivalent of county favors. It, therefore, redounds greatly to their credit that when the vote was taken the rate-payers of these municipalities with a

shortly after they were taken over by the county, it is fair to assume that a large and increasing percentage of rate-payers has discovered the convenience of making constant use of them, and that the objection, based on the alleged injustice to many called upon to pay increased taxation on this account, and yet living so far distant from county roads as to derive no benefit from them, was without any very solid foundation. In process of time a readjustment of the assessed values of property, as affected by its more or less favorable location in regard to these roads, will no doubt remedy any serious injustice of this nature. The argument in favor of toll roads, that the user should pay to keep them in repair, would have been far more difficult to combat, if the intention had been to saddle the local municipalities with their maintenance.

These roads, as located in Wentworth, carry the traffic not belonging only to the municipalities through which they run, but from all the country around as well. Their maintenance by the county is an equitable distribution of the expenditure required to keep them in repair.

What trade protectionists would probably term a species of jug-handled free trade in roads, is the admittedly objectionable position which a county situate like Wentworth is compelled to assume, when, having adopted a system of county roads, it is compelled to maintain them at its sole expense for the joint benefit of itself and adjoining counties, which show no disposition to offer reciprocal advantages. In reference to road improvements between adjoining counties, it has been suggested that Legislative provision be made to encourage joint action, and for a readjustment of Government grants, in such manner that the grant or part of the grant apportioned to any county which declines to take advantage of it may be distributed amongst adjoining counties to the extent of the benefits which the county having no county system may have derived from county systems of roads, where such have been adopted by adjoining counties.

The county system of roads, as finally approved by the ratepayers of Wentworth, the vote having been taken in the month of November, 1902, included the 38 miles of roads already held by the county, and made provision for (1) the purchase of the 29 miles of toll roads above mentioned for \$63,104 (the prices of the several roads having been previously settled by arbitration), for (2) the assumption by the county, and the construction of 62 miles of new roads, at an estimated cost of \$48,350, and (3) for the payment of the amount of \$6,550 to certain local municipalities, to compensate them for the roads previously purchased by them from the Government, the aggregate amount required for the scheme being \$118,000, including \$20,000, the estimated amount of the Government grant. Upon the election of the council of 1903 the necessary proceedings were initiated for carrying into effect the proposed new system of county roads. Whilst the several roads were being taken over and duly named and numbered, and their limits regularly defined, as a preliminary provision for their supervision, the county was divided into six road divisions, corresponding as nearly as possible with the existing county divisions, with the representatives of each division as local commissioners.

Following this, at a special meeting of the council held in the month of April, by-laws were introduced defining the duties of a county road superintendent, and appointing to the office, at a salary of \$800 per annum, the gentleman under whose charge, subject to the supervision of the council, as a roads and bridges committee, the whole work of constructing and repairing the Wentworth system of county roads has since been carried on.

The by-law defining the duties of the county superintendent, briefly epitomized, makes provision for a general supervision by him of all roads and bridges, with power to engage men and machinery for all necessary purposes; for the appointment by him of two or more section men for each road; for making, in concert with the local commissioners, an estimate of the amount recommended to be expended during the year for the maintenance of each road; for his carrying out such work within the limits of the appropriations; for keeping the necessary accounts of all work done, and for submitting them for inspection, with accompanying vouchers; for the payment by him of employees and for supplies, but when exceeding a certain amount, upon order of the Warden or Chairman of the Roads and Bridges Committee; for controlling all road machinery and implements, and for furnishing security for the due performance of his duties.

The county superintendent appointed by Wentworth is not a professional engineer, but he is a man of some practical experience in quarrying and contract work, etc., and has served as township reeve. He has proved himself a capable official, and has given excellent satisfaction under the trying circumstances of starting an almost new undertaking. The council granted him a bonus at the December session, in recognition of his services.

It has been claimed as an objection to the substitution of one road superintendent for the system formerly adopted by having three councillors, as commissioners of each county road, that the members of the council are now unable to keep in sufficiently close touch with the road work in progress, and that to allow the superintendent (although it is true that he is nominally under the supervision of the Roads and Bridges Committee) the same authority for hiring men and teams and for purchasing supplies as was formerly possessed by the county road commissioners, is shifting too great a responsibility upon him from the shoulders of the council, where it should more properly rest.



It is probable that, to meet these objections, two safeguards, which have already been suggested, will be adopted in the coming year, viz., a monthly audit of the road accounts by the county auditors and the appointment of two members of the Roads and Bridges Committee, one for the north and the other for the south, to act as inspectors of work in progress, and to act in concert with the superintendent in the purchasing of supplies and the letting of minor contracts.

Whilst not fully satisfactory in every particular, Wentworth's experience has clearly illustrated the wisdom of exchanging divided for single management. Roadmaking is a science, and experience; the only school in which proficiency can be acquired, and although in the multitude of councillors there is wisdom, it is yet a speedier process and

at once the landmarks of a county road.

The first matter taken in hand by the Superintendent was the preparation of the annual estimates for road maintenance. Much interest was taken in this, which had been the subject of considerable discussion before the submission of the by-law. The total mileage was now 140 miles, including two additional miles recently assumed to supply missing connections, and the total estimate, as submitted in the report to the council, amounted to \$13,660, or nearly \$100 per mile. This, however, included the estimates for refacing with 4 inches of metal, 12 feet in width, 2 miles of one of the toll roads just taken over, at \$800 per mile, and for refacing 1 1/4 miles of another road, 8 feet in width, at \$480 per mile. It also included the first estimate of



Scrapping macadamized roads of Wentworth in early spring.

less expensive to educate one road superintendent, who proposes to make roadmaking his profession, and devote his whole time to the work, than many councillors, who at best are only amateurs at the business and give it but a divided attention. Again, friction always signifies loss of power. With one driving wheel always drawing in one direction, the machinery of management runs smoothly, whilst with many driving wheels, even though of greater capacity, yet by reason of their drawing in many different directions, the whole business must in short order be brought to a standstill. An uniformity of system on all county roads is not the least noticeable feature of the single management. When a traveller in Wentworth strikes a road properly graded and rounded up, he recognizes

\$2,975 for replacing with a culvert and fill the trestle work bridge before referred to, which his inspection at once discovered to be in a dangerous condition. It is noteworthy that, although the detailed expenditure varied from the amounts estimated in many instances, yet the total expended account on maintenance during the year 1903 was \$13,637.46, or within \$30 of the total estimate of \$13,660.

Other necessary preliminaries to the undertaking of the good roads scheme in Wentworth were the purchase of road machinery and the acquisition of gravel pits and stone quarries. As regards the latter, it is probably sufficient to mention that Wentworth has expended thus far about \$1,400 on this account, and holds by purchase or leasehold six stone quarries and three

gravel pits, more or less conveniently located in different parts of the county. It might also be stated that of the toll roads taken over by Wentworth one only (4 miles) was a gravel road, and that except for facing purposes gravel has not hitherto been extensively used in Wentworth County.

Prior to the year 1903 the county owned in the way of road machinery one portable rock crusher, with capacity of about 14 cords per diem, and one horse roller of five tons weight. These had been used partly for repairs and construction purposes by the county, and partly for the use of the local municipalities, to whom they had been loaned, as occasion arose. In purchasing machinery for the new road system, it was considered advisable (taking its costly nature into account) to limit its amount to something not largely in excess of what would be the requirements of the county for repairs and reconstruction purposes, after the completion of the new roads now proposed to be constructed. With this in contemplation, the county proceeded to purchase the following: One Universal steam roller, of 9 tons weight (10½ when loaded), 35 horse-power. This was considered the roller best adapted to country roads, sufficiently heavy for all practical purposes, easily handled, and one that with reasonable precautions would pass safely over any ordinary country bridges and culverts. A second rock crusher of similar capacity with the one already owned by the county; two road graders; one scarifier, of 1,500 pounds weight, made to the order of the superintendent, and reported to have done good service; one tank with sprinkler, for use prior to rolling; four wheel scrapers; two drag scrapers; three grading ploughs; one pick plough, etc., etc.

For operating the rock crushers and graders, traction engines have been hired, and as regards the use of a traction engine for drawing the graders, the Superintendent reports as his experience that where the road is solid a traction engine is preferable to teams, being both steadier and cheaper, but where the engine is required to travel on loose ground it loses its traction power, and teams must be employed. The total amount expended by Wentworth during the year 1903 in the purchase of machinery was nearly \$6,000.

From various causes the work of constructing the 62 miles of new roads in Wentworth, for which the appropriation of \$48,350 was made, progressed but slowly during the year 1903. The length of time necessarily occupied in organizing and furnishing the machin-

ery required for the new undertaking, the employment during the earlier part of the season of what county machinery was available in other necessary work, and the difficulty, and at times impossibility, of procuring sufficient labor and teams, all contributed to cause delay and to make the expense of the work much greater than was originally estimated. Out of the good roads fund of \$48,350, appropriated for new roads, only \$11,269.23 was expended during the year 1903, and although about 15 miles of new roads were graded and rounded up, but 2 1-8 miles were completely constructed.

The estimates for new roads were as follows:

For macadamizing 4 miles at \$1,000  
per mile ..... \$ 4,000

For macadamizing 22½ miles at  
\$1,500 per mile..... 33,750

For macadamizing 35½ miles... 10,600

Out of the four miles, for which \$4,000 was appropriated, ¾ mile, which passes through a village, was constructed with 9 inches of metal, 12 feet in width, and an additional ⅝ mile, 8 feet in width, making a total of 1¾ miles out of the 4 miles fully completed, and about 1½ miles additional graded, \$3,987.06, or practically the whole appropriation of \$4,000 having been expended. The excess of the cost of this road over the original estimates is partly accounted for by the extra width of 12 feet, which was decided later, for the ¾ miles of road passing through the village referred to, the cost of constructing the portion 8 feet in width costing \$1,055 per mile.

The 22½ miles, for which the appropriation was \$1,500 per mile, comprises three separate roads, containing 4½, 5, and 13 miles, respectively. Of the 4½ miles, ¼ mile was macadamized with 9 inches of metal, 8 feet wide, the cost of which was \$522, the length of haul being four miles; \$300 was also expended in grading on this road. On the five-mile road the work of construction was not commenced, and the road was maintained from the appropriation made therefor and for all other roads in the early part of the season.

On the 13 miles of roads, out of the \$19,500 appropriated for construction purposes, \$5,925.43 was expended, as well as \$390 appropriated for maintenance, this expenditure providing for the grading of all but 2½ miles, and the macadamizing of 1½ miles with 9 inches of metal, 9 feet in width, the cost of construction for the mile, from which the length of haul did not exceed ½ mile, being \$1,800.

The appropriation of \$10,600 for 35½ miles of roads, covers five different

roads, the appropriation for which varies from \$150 per mile to \$1,000 per mile, according to the condition of the several roads, some 20 miles of which are old macadam roads, more or less out of repair, and to the amount which, according to the estimates of the County Commissioners, who formulated the

scheme, these roads would require to have expended upon them, to raise them to the condition of county roads. Of the whole of this appropriation only \$512.46 was expended in 1903 for grading and repairing an old macadam road of  $3\frac{1}{2}$  miles in length, the original appropriation for which was \$1,200.

### County Road Appropriations and Expenditures for 1903.

Nos.	Roads.	Miles.	Appropriations.		Expenditures.		
			G. Roads.	Repairs.	G. Roads.	Repairs.	Early Repairs.
			\$	\$	\$ c.	\$ c.	\$ c.
1	D. and W. Beverly .....	12	3,000	360		223 08	
2	Ninth Beverly .....	9.50	2,400	360		68 50	
3	Lynden .....	4	4,000	160	3 987 06		
4	Governors .....	5		350		337 25	20 30
5	Governors extension .....	4.50	6,750	135	844 28		
6	Ancaster stone .....	12.28		2,535		2,645 60	132 89
7	D. and B. hill .....	1.11		400		451 50	
8	Green .....	5	7,500	200		22 00	
9	Plains .....	4.16		600		550 27	18 00
10	Port Flamboro' .....	2.28		250		257 93	18 00
11	Waterdown .....	4.50		3,175		4,072 89	109 63
12	Waterdown extension .....	2	1,000				4 13
13	Town Line .....	5.25		400		133 62	36 98
14	Town Line extension .....	7	1,000	165		203 15	
15	Sydenham and extension .....	2	2,000	70		65 31	8 73
16	D. and W. W. Flamboro' .....	3.25	1,200		512 46		82 10
17	Brock .....	14		740		24 65	400 16
18	Hamilton and Caledonia .....	10		940		348 32	42 97
19	Mt. Albion .....	6.82		1,610		946 09	114 74
20	Stony Creek .....	13		390	5,925 43	1,802 37	37 60
21	Binbrook .....	13	19,500			390 00	
22	Roads and bridges .....					381 27	
Totals .....		140.68	48,350	13,660	11,269 23	12,552 73	1,084 73

## WELLINGTON COUNTY ROADS.

Report by Jas. McEwing, Chairman  
County Roads Committee.

When the Act for the improvement of public highways was enacted by the Legislature in 1901, the County of Wellington was in a somewhat unique position in regard to public highways. For many years the county had been maintaining a county road system 144 miles in extent. Part of this system was originally constructed by the county; part of it had been built by the municipalities in which it was situated, and afterwards taken over by the county as part of the county system, the municipalities being reimbursed by the county for the cost of construction; and part of the system had been owned by road companies, who had built gravel roads in different sections of the county, and collected tolls thereon from the travelling public. The county had also purchased these company roads.

The original cost of constructing and acquiring the 144 miles of county road was two hundred and seventy thousand dollars (\$270,000), and it required an

annual expenditure of nearly eleven thousand dollars (\$11,000) for the proper maintenance of the 144 miles of county roads. These roads were originally located and constructed with a view to providing an outlet to Guelph and securing connection with the railway, and as that was the shipping market for nearly all the county municipalities, the county system for many years gave satisfactory results to the general public.

When the railways were extended through the northern portions of the county, providing shipping markets in every municipality, the conditions were entirely different. New roads leading to the markets had to be constructed and improved. The expense of this work had to be met by the municipalities within which the highways were situated; the county not being willing to assume them as county roads. Under these conditions a number of the municipalities, not having a fair proportion of the county roads situated therein, considered that they were being unfairly treated, inasmuch as they had to construct roads to the new markets at their own cost, while they were also being annually taxed for the main-





Wellington County Roads.

ance of the county roads, which, under the new conditions as to markets, were very little used except by the residents of the municipalities within which they were situated.

Under these unfair conditions a strong movement arose for the abandonment of the county roads to the municipalities within which they were situated. This movement would doubtless have been successful but for a difficulty met with in the matter of the original title to certain roads which had been acquired by the county, and which enabled the municipalities to avoid all responsibility for the maintenance of said roads if abandoned by the county.

Special legislation was then obtained authorizing the county council to grant aid to roads other than county roads, to enable the county council to deal justly by the different municipalities in the matter of road expenditure. The measure was designed on lines of equity, but in the practical application of the principle it was a failure. In many instances influences were at work in the council which prevented justice being done when the grants were made, and the suffering municipalities soon realized that they were always more or less at the mercy of cliques or combinations which might be found in the council, hence a good deal of feeling against the county roads system existed in several sections of the county, when the Act for the Improvement of Public Highways was passed in 1901.

In that measure provision was made which permitted a municipality to apply the whole or part of the monies to which it was entitled under the Act towards paying any expenses that might be incurred in the purchase of toll roads within the municipality, or for freeing the same from tolls. The Act apparently took no cognizance of conditions such as existed in the County of Wellington, where an expensive system of county roads were being maintained by the county, and large sums of money had already been expended by the county in the purchase of toll roads, and freeing the roads from tolls, no provision being made for applying the monies to which it was entitled under the Act, towards reimbursing the county for the expenditure already incurred in doing the very thing which the Act was supposed to be specially designed to aid and encourage.

Briefly the situation was this: In the County of Wellington, when the Act was passed, an extensive system of county roads, which had cost the county a large sum of money to acquire, was being maintained by the county. A strong feeling against the

county roads system existed in some sections of the county, owing to the uneven distribution of the roads in the different municipalities, and no recognition was given in the Act to any system of county roads that might be in existence at the time of passing the Act. However, this oversight has been remedied to a certain extent by the amendments to the Act which were enacted during the session of 1903. The foregoing explanation of the situation will give some idea of the problem which the Wellington County Council had to solve if the county was to derive any benefit from the provisions of the Act for the Improvement of Public Highways. It will also give a better understanding of the reasons which induced the council to take the course which has been taken in dealing with the subject of county roads under the provisions of the said Act.

At an early date after the passing of the Act in 1901 the council appointed a special committee with instructions to go fully into the question as to whether it would be advisable for the County of Wellington to endeavor to take advantage of the provisions of the Act, and also as to how the provisions of the Act could be most readily applied to the conditions existing in Wellington. That committee reported to council at the next session strongly recommending that the County of Wellington should take advantage of the provisions of the Act; also that, in compliance with the requirements of the said Act, a By-law be prepared and passed by the county council, designating the roads to be improved under the provisions of the Act; that the roads so designated be the 144 miles of roads now maintained by the county, along with an additional 26 miles, making a total of 170 miles of road to be located within the municipalities which have not a fair proportion of the old county roads; that the 26 miles be so distributed in the different municipalities as to comply with the provisions of the Act as to the proportion of county road to which each municipality would be entitled; that, in the opinion of the committee, if this course was pursued, a fair measure of justice would be dealt out to those municipalities which had suffered in past years under the county roads; that by so doing the feeling antagonistic to the county roads system would be allayed and the council would be able to proceed with the improvement of the county roads without any section of the county feeling aggrieved over the expenditure incurred. Each municipality would receive a

fair proportion of the public money which was being expended on county roads.

The report of the special committee was adopted and the recommendations therein were approved by the county council. A by-law was prepared and finally passed at the January session of 1903 designating the roads to be improved under the Act. This By-law was submitted in accordance with the provisions of the Act to the various township councils and received the approval of the necessary proportion of the township councils. A By-law was also passed appointing the county councillors representing the various county council divisions, as commissioners to superintend the proposed work of road improvement upon the county roads, situated within the division which they represented.

At the session of May, 1903, sums of money were granted towards paying the expenses which might be incurred

ing bridges or culverts, also the estimated cost of the proposed work. Blank forms were also provided to fill up and return to the county clerk after the work was completed, giving the section of the road, the nature of the work done, and the actual cost of such work. Copies of all such returns were to be forwarded to the Provincial Public Works Department in Toronto.

In carrying out the work on the roads practically all the commissioners employ some person who resides adjoining the road and who is known as the road overseer. This man is paid by the day for time expended on the road, and has charge of from 5 to 8 miles of road as the case may be. His duties are to see that the road is kept open during the winter, to receive and keep a proper account of and spread all gravel being delivered on his section of the road, break or rake off stones, make small repairs to culverts or bridges, construct new culverts, give such assistance as



A Main Road in Wellington.

in improving the county roads. Sums of money were also granted by by-law under section 7 of the amendment of 1903 to the Act of 1901, to the various incorporated towns and villages in the county for the improvement of certain highways situated within the said towns and villages. Instructions were given to the commissioners to make an inspection of all county roads situated within their divisions, making notes of the sections of such roads that were in the greatest need of improvement. Blank forms were supplied to the Commissioners to fill up and return to the county clerk giving specifications of sections of road they proposed to improve, the nature of such improvement, whether draining, grading, gravelling, reshaping of roadway, resurfacing of road-bed with gravel, repairing or construct-

may be required when the road machine is at work on his section, clean out the watercourses, cut the weeds in the road allowance, and have a general oversight as to keeping his section of the road in good condition for the traffic passing over it. Gravel of the best quality available for the county roads is purchased and paid for by the commissioner.

Hauling gravel is let by public tender, by the yard, strict instructions being given to the road overseer to accept delivery of no gravel which is not up to a certain standard. Concrete and sewer pipes for drainage and culverts are purchased by the commissioner under contract to deliver. In cases where this can not be arranged, teams are employed by the day to secure delivery. Grading and reshaping the



roadway is almost entirely done by means of the road machine, this being considered the most satisfactory method of doing the work. Some of the divisions own a road machine and the commissioners hire men and teams to operate the machine. In other divisions the townships have road machines which are hired by the day, the commissioner hiring men and teams to operate it. In other sections machines are owned by private parties who supply all or part of the power to operate the machines as may be arranged.

Practically all culverts being constructed are either concrete or sewer pipe, if not very large. If large, they are built of concrete constructed in the form of an arch. Bridges are being constructed with stone or concrete piers, and steel superstructures. An effort is being made as far as possible to have all new structures of a permanent character.

The manner of treating the roadbed varies somewhat on account of the traffic requirements, the supply and cost of material, and the varied conditions of the original roadbed. A considerable portion of the county roads were originally constructed 30 feet or upwards in width between the ditches, with a sheer drop of from one to four feet to the bottom of the ditch alongside, and owing partly to faulty construction and partly to heavy traffic the grade between the ditches had become comparatively level, with the roadbed in many places lower than the earthwork adjoining. The principle adopted in reshaping such roads is to practically abolish ditches altogether, that is the old style of ditch with the sheer drop from roadway to bottom of ditch. The earthwork is graded down between the metal roadbed and the ditch, leaving a crown on roadway of one and one-half inch to the foot from the centre of roadway to the outside edge of what would then be a watertable instead of a ditch. The roadway is finished in an evenly rounded grade from the centre of roadbed to the level of the bottom of the watertable leaving the roadway graded in such form that a vehicle can be safely drawn down from the metal roadbed into the watertable without any danger of being upset.

A considerable portion of the old county road is not less than 30 feet between the outside of the watertables when completed in the foregoing manner. On sections of road where the traffic is comparatively light, a width of 22 to 24 feet makes a satisfactory roadway, but when the soil is of a

loamy, friable nature the roadway is finished with a little more crown.

Drainage is secured by constructing the watertable at from 18 to 24 inches below the level of the roadbed, and by providing sufficient outlets from the watertable to prevent water accumulating alongside the roadway. In side-hills where the roadway is soft or inclined to be boggy, tile drains are placed just outside the metal roadbed, and carried to a proper outlet giving very satisfactory results. The first and most important principle in the construction and maintenance of roads is to get the water out, and keep it out of the roadbed.

The method adopted by the council for superintending and carrying out the work of road improvement during the past season has not proved to be an unqualified success, owing largely to lack of experience in such work. Few if any of the Commissioners succeeded in filling out in a satisfactory manner the forms of specifications for the work proposed to be done in their divisions. A similar lack of information in regard to the nature and amount of work done was met with in the returns made after the work was completed. Unless there is a radical change from the method adopted by the council for the supervision of the work of road improvement the difficulties met with the past season are likely to be sharply accentuated in the near future, owing to the legislation of last session re the formation of county councils.

If highway improvement by a system of county roads is to be successfully carried out under the Act of 1901, it is absolutely necessary that there should be continuity of purpose, uniformity in the work and economy in the expenditure. None of these desirable results can be obtained if the work is under the supervision of 20 or 25 different commissioners with different ideals of roadmaking and perhaps 50 per cent. of these commissioners annually changed by the electors. Having 170 miles of county road to improve and maintain, and an annual expenditure of close to \$15,000 on roads, it would certainly appear like a good business transaction for the council to place that expenditure under the supervision of some competent person who would be likely soon to become an expert at that kind of work.

The question of establishing a system of county roads under the Act of 1901, whether it would be advisable to do so, and the general advantages to be gained from a county road system, can only be decided by having a thorough

knowledge of the conditions which obtain in the matter of roads and markets. Under the conditions previously outlined, it certainly was advisable to do so in the County of Wellington. The conditions are so varied in the different counties and in the different sections of the Province that each county should consider the question from the point of view as to existing highways and market conditions in that county. The broad principle might be laid down that in counties where, to any great extent, the residents of one or more municipalities travel the highways of adjoining municipalities to reach their market, a county roads system would probably be the most fair and satisfactory means of providing that which is so desirable—good leading roads to market. But in counties where the residents of the different municipalities do not travel to any great extent

council could not, or would not, spend the money to as much advantage as the local authorities would, and in part from dissatisfaction as to the roads designated, the answers returned to the council were not sufficiently numerous to enable the council to proceed.

Believing, however, that the negative answers given by some of the municipalities were caused by dissatisfaction with the roads designated, the county council in June of the same year passed another by-law, slightly different to the first as to the roads, and submitted the usual questions again, with the result that more than one-third of the municipalities expressed themselves as adverse to the system. Nothing daunted, the county council believing a county system to be in the interest of the public, determined to give the ratepayers a chance of deciding the question for themselves directly, as provided in sub-



In Simcoe.

the highways of adjoining municipalities to reach their markets no good purpose would be served by establishing a county roads system. In other words, when the highways are local in their service they should be locally maintained. Where highways are general in their service they should be maintained by the general public who use them.

## SIMCOE COUNTY ROADS.

Report by D. Quinlan, Chairman Roads and Bridges Committee.

In January, 1902, the County Council of Simcoe passed a By-law designating certain roads for improvement under the Act of 1901, but from opposition on the part of the councils of the local municipalities, arising in a great measure from the fear that our county

section 4 of the Act, namely, "Are you in favor of a county road system?"

We found that a good deal of interest was taken in the subject; arguments were presented, both pro and con, through the press, and in the end the people thoroughly grasped the situation, and at the municipal elections held in January, 1903, the majority in favor of the proposition was some 1,500. The towns and villages were overwhelmingly in favor of the system, whilst the townships, strange to say, were divided, some being in favor, whilst others were as strongly opposed as the towns and villages were in favor.

The majority of the municipalities had objected to the roads designated and this difficulty was got over by reference to arbitration, as provided by the Act. The very idea of an arbitration in which a municipality is one of the parties, seems to imply a long,

tedious and expensive piece of legislation, but we found no difficulty whatever worth speaking about, and the expense trifling, for in every case, the question as to which roads were to be selected was settled amicably between the local council and the county council, and the selections made by this pre-arrangement put into the form of awards, thus rendering the arbitration of a purely formal character.

Through want of consideration, however, a mistake was made in one or two cases in the selection of arbitrators, either the county council, or the local municipality being unmindful of the fact that officials of the municipalities are disqualified from acting as arbitrators, and the result was in these cases that our work had to be done over again in order to avoid some person, dissatisfied with the roads selected, moving on the advice of some over-watchful and ambitious limb of the law to quash the awards. Having overcome these difficulties, and the season advancing, we were anxious to begin work, and in May work began on the roads selected. After incurring a great deal of expense in this way, we advertised our debentures—\$100,000 worth—bearing 4 per cent., for sale and receiving a number of offers, we accepted the best, and proceeded to close the deal, only to find that our difficulties were not yet over. Acting on advice, we proceeded on the assumption that section 9 of the Act warranted a county council in raising the funds without submitting the question as to the issuing of the debentures and raising the funds to the ratepayers under the Municipal Act and obtaining their assent. Any ordinary layman would of course imagine that the ratepayers having once approved of the scheme which necessarily involved the raising of the funds, it would not be necessary to submit practically the same question again to them in a different form. Had it occurred to us that this was not the plain meaning of the Act, we might, in order to avoid trouble, have submitted the necessary by-law to the ratepayers at the same time as we submitted the questions set out in sub-section 4 of sec. 2. The solicitors for the purchasers of the debentures raised the objection I have spoken of, and we were then in the dilemma of either stopping our work and submitting a by-law, with the possibility of its defeat, or going to the Legislature. After discussing the question with the Provincial Commissioner of Highways, who stated it was the intention of the Act that the County Councils should have the power to raise the necessary funds within the limits defined by sec. 9, we

brought the matter to the attention of the Legislature, and at the last session they put the section in question beyond doubt by adding words to show clearly the intention as interpreted already to us.

We designated in our system 434 miles, seemingly a very great amount, but comparatively small in view of our very large area. It was the size of our county and the difficulty in satisfying the different local municipalities that determined us on having so much. As it is, however, we, I think, made a mistake; we should have selected fewer roads, a less mileage. We should have been able to push our work to a speedier conclusion with better results. We have already constructed about 123 miles of roads, at a cost of \$61,602.61.

Gravel, when obtainable, we found the most economical roadmaking material, and, with the exception of some three or four miles of stone, it was the only material used, and where good gravel could be obtained, and laid on a properly graded road and well rolled after rain, the results were admirable. We determined not to purchase steam rollers, because of the number that would be required to do our work, it being considered owing to the fact that we would have to depend on rainfall to dampen the road, without which rolling is useless, we would need so many rollers to take advantage of these times, that it would only pay us to purchase the ordinary horse rollers. These rollers have given good results. The rolling, however, must be done when the road is damp.

Including the Government grant, we purpose spending \$150,000. \$140,000 of this sum we have determined to spend in the townships in proportion to the equalized assessed values. The remaining \$10,000 we add for the improvement of those roads generally used by more than one municipality, that is to say, for example, those leading to a market town or commercial centre and passing through one township as a main thoroughfare for the ratepayers of another township. Out of the general funds of the county we provided \$5,000 for the improvement of the roads in the rural parts of the towns and incorporated villages, confining this, however, to such roads as are continuations of the roads within the general system. Our experience teaches us that these roads within the towns and villages are generally neglected, and this neglect in all cases is greatly to the disadvantage of the rural communities.

Labor being scarce and wages correspondingly high, we of course have found that the cost of road-making has been



greater than it would have been even two years ago. On the whole, the results have been good and encouraging. Roads have been straightened, grades have been moderated, if not done away with, and, as a rule, first-class highways have been furnished, upon which heavy loads can be drawn with comparative ease, and on which it is a pleasure to drive. If the use of broad tires on wagons could be successfully enforced the evil of cutting the roads up would be sensibly diminished, if not done away with altogether.

The only objection that I have heard to the system has sprung from people whose residences are on the county roads, and to whose places the work has not yet reached. We have to begin somewhere. We began at the centres—the towns and villages—and worked outward therefrom. We were not able to finish our work, and as there are always some people to find fault, the fault-finders were usually confined to those up to whose homes the roads were not finished at the time we were compelled desist. It speaks well for the system, however, when I can say that the criticism comes from these people who must think highly of the completed portions when they complain because the balance is not yet finished.

## COUNTY ROADS BY-LAW OF LANARK.

By Law No. 486.

By-law designating highways to be improved and toll roads to be purchased in accordance with the "Act for the Improvement of Public Highways" and authorizing the issue of debentures of the County of Lanark to the amount of \$65,000 for the purpose of raising the sum required therefor.

Passed June 28th, A.D. 1902.

Whereas by an Act entitled "An Act for the Improvement of Public Highways" the sum of \$1,000,000 was set apart to be paid out of the Consolidated Revenue Fund of the Province of Ontario to aid in the improvement of public highways upon the terms and conditions in the said Act set forth;

And whereas it is desirable that the County of Lanark participate in the said sum so set apart and for that purpose should adopt a system of county roads and construct or repair the same in accordance with the regulations of the Public Works Department with respect to highways as in the said Act prescribed;

And whereas it is necessary to designate the highways to be improved in accordance with the provisions of the said Act;

And whereas it is desirable to raise the sum of \$65,000 to be applied for the

improvement of the said highways and the purchase of certain toll roads;

And whereas in order thereto, it will be necessary to issue debentures of the said county for the sum of \$65,000 as hereinafter provided, which is the debt intended to be created by this By-law;

And whereas it is desirable to make the principal of the said debt repayable by yearly sums during the period of twenty years, being the currency of the said debentures; said yearly sums being of such respective amounts that the aggregate amount payable in each year for principal and interest of said debt shall be as nearly as possible equal to the amount so payable in each of the other nineteen years of the said period;

And whereas the total amount required by "The Municipal Act" to be raised annually by special rate for paying the said debt and interest as hereinafter provided is a sum sufficient to discharge the instalment of principal and interest accruing due on the said debt for such year as shown in the fourth column of Schedule "A" hereto annexed;

And whereas the amount of the whole rateable property of the County of Lanark according to the last revised and equalized assessment roll is \$10,531,883;

And whereas the existing debenture debt of the said county is the sum of \$20,000, of which no principal or interest is in arrear;

Therefore the Council of the Corporation of the County of Lanark enacts as follows:—

1st. The toll roads in the County of Lanark which are as follows:

(1) Commencing at the westerly limit of the Town of Perth at the intersection of Dufferin street in the said town with the boundary line between the Townships of Bathurst and Drummond, thence along the present macadamized road to the southern boundary of the Village of Lanark.

(2) Commencing at the intersection of the eighth concession line of the Township of Bathurst with the said boundary line between the Townships of Bathurst and Drummond, thence westerly along the present toll road to the Village of Fallbrooke, in the said Township of Bathurst, and

(3) Commencing at the intersection of the third concession line with the said boundary line between the Townships of Bathurst and Drummond, thence westerly along the third concession line to the end of the present macadamized road being at or near the side line between lots numbers eighteen and nineteen in the said third concession, shall be purchased by the said county and freed from tolls and the same when so purchased shall be assumed by the said county and form part of the County Highway System.

2nd. The following highways are hereby designated as the highways to be improved in accordance with the provisions of the Act for the Improvement of Public Highways, namely:—

(1) Commencing in the Township of Montague on the road between Smith's Falls and Merrickville at a point about eight miles distant from the eastern boundary of the Town of Smith's Falls (and being at or near Kilmarnock) thence northerly, westerly and again northerly along the said Merrickville road to the said boundary line of the Town of Smith's Falls.

(2) Commencing at the northwestern boundary of the Town of Smith's Falls on the Old Perth Toll Road, thence west-

erly following the said Old Perth Road by way of the Village of Port Elmsley to the eastern boundary of the Town of Perth.

(3) Commencing at the northern boundary of the Town of Perth at the intersection of Drummond street in the said town with the third concession line of the Township of Drummond. Thence northerly along the road commonly known as the Innisville and along the present travelled road through the Townships of Lanark, Ramsay and Beckwith to the western boundary of the Town of Carleton Place.

(4) Commencing on the above mentioned road from Perth to Carleton Place at the intersection of the third concession line of the Township of Ramsay with the said road, thence northerly and westerly along the present travelled road to the second concession line and thence northwesterly along the said second concession line as travelled to the side line between lots number 20 and 21.

(5) Commencing at the northwestern boundary of the Town of Almonte thence northwesterly along the ninth concession line of the Townships of Ramsay to the side line between lots number 20 and 21, thence westerly along the said line to the second concession line.

(6) Commencing on the ninth concession line of the Township of Ramsay at the intersection of the side line between lots number 20 and 21, thence northwesterly along said ninth concession line to the boundary line between the Townships of Ramsay and Pakenham, thence northwesterly along the ninth concession line of the Township of Pakenham to the side line between lots number 5 and 6 in the said concession, thence northerly along the present travelled road to the Village of Pakenham, thence northwesterly along the eleventh concession line to a point at or near lot number 15 where the travelled road turns to the west, thence westerly along the present travelled road to the side line between lots 16 and 17 in the tenth concession of the said Township of Pakenham.

(7) Commencing at the southern boundary of the Town of Carleton Place where the Franktown road intersects the same, thence southerly along the present travelled road leading to Franktown through the Township of Beckwith to the third concession line of the said township; again commencing at the intersection of the Franktown road with the eleventh concession line, thence north-easterly along the said eleventh concession line to the boundary line between the Townships of Beckwith and Goulbourn.

(8) Commencing in the sixth concession of the Township of South Sherbrooke where the line of the Canadian Pacific Railway Company crosses the present travelled road at or near the Maberly Station of the said railway company, thence northwesterly along the said travelled road through the Village of Maberly to the eleventh concession line of the said township.

(9) Commencing at the northern boundary of the Village of Lanark, thence northerly along the present travelled road by way of Herron's Mills to the Village of Middleville in the Township of Lanark.

(10) Commencing on the said travelled road between Lanark and Middleville at Herron's Mills, thence northerly and westerly along the present travelled road through the Township of Lanark and Dalhousie to Watson's Corners.

(11) Commencing at the northwestern end of the stone road at or near the Fall

River in the Village of Fallbrooke and thence northerly and westerly along the usual travelled road in the Townships of Bathurst and Dalhousie to the Village of McDonald's Corners.

(12) Commencing at the fourth concession line of the Township of Darling, on the present travelled road from Brightside to Tetlock, thence northerly along the said road to Tetlock, thence easterly along the side line between lots numbers 5 and 6 in the 5th and 6th concessions of the said township to the seventh concession line, thence in a southerly direction along the present travelled road to the boundary line between the Townships of Darling and Lanark at the eight concession line.

(13) Commencing on the boundary line between Dalhousie and Lavant Townships on the present travelled road on lot number one in the sixth concession, thence northerly passing through lots numbers 1, 2, 3, 4 and 5 to the 8th concession line. Also commencing on the said boundary line between the aforesaid townships on the present travelled road at lot number 1 and part 2 on the 5th concession in an easterly direction, thence following the present travelled road through fifth and fourth concessions of the said township to the division line between lots 12 and 13 in the said 4th concession.

(14) Commencing on the boundary line between the Townships of Elmsley and Bathurst at the intersection of the same with the boundary line between the Townships of Bathurst and Drummond, thence westerly along the said boundary line between the Townships of Elmsley and Bathurst and Burgess and Bathurst to Grant's Creek, thence southerly along the main travelled road in the Township of Burgess a distance of two miles.

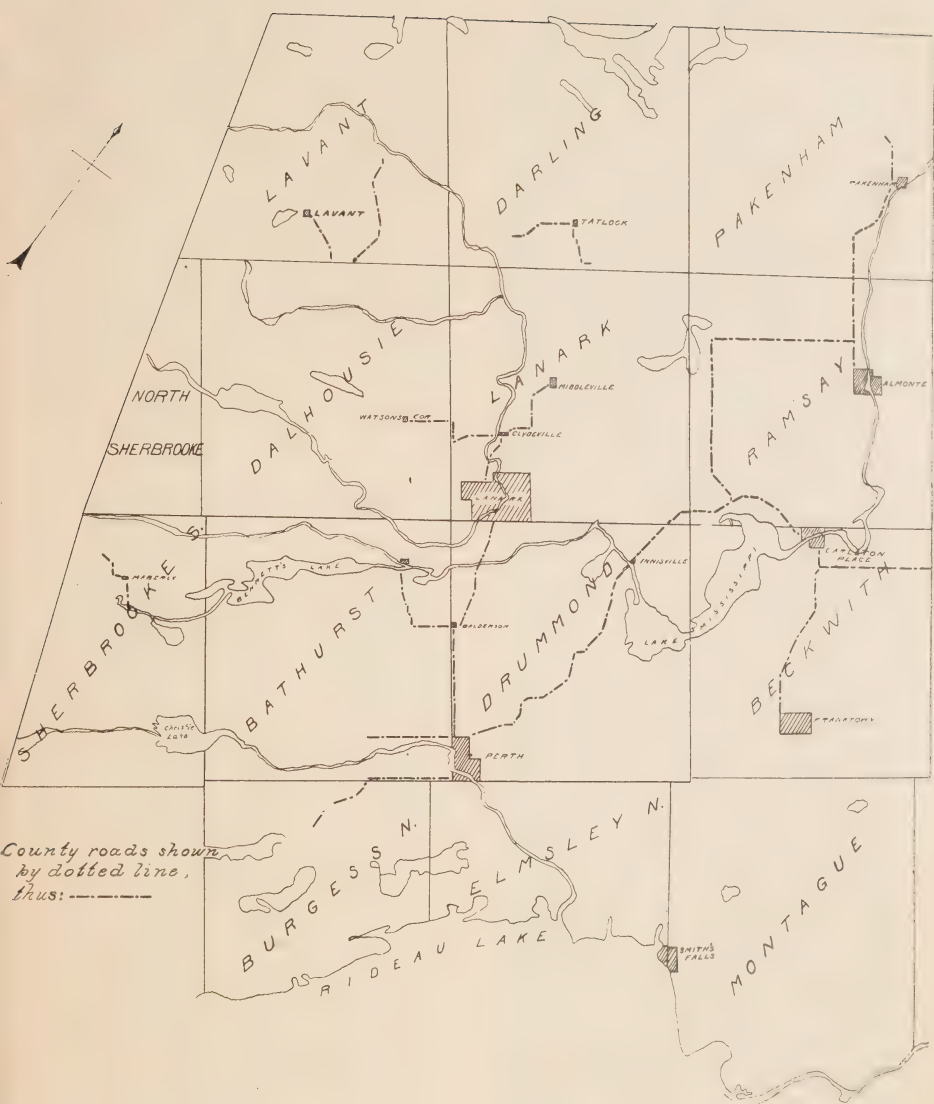
And the said highways when so improved shall, with the toll roads purchased as hereinbefore provided, be assumed and maintained by the county and shall form the county highway system of the County of Lanark.

3rd. The sum of \$65,000 shall be expended by this county in the improvement of the said highways hereinbefore mentioned and the purchase of the said toll roads; and for the purpose of raising the said sum debentures of the said county to the amount of \$65,000 in sums of not less than \$100 each shall be issued on the eighteenth day of December, 1902; each of which debentures shall be dated on the day of the issue thereof and shall be payable within twenty years thereafter.

4th. Each of the said debentures shall be signed by the Warden of the said county and countersigned by the Treasurer and Clerk of the said county who shall attach thereto the corporate seal of the said corporation.

5th. The said debt and the debentures issued therefor shall bear interest at the rate of three and three-quarters per cent. per annum from the date thereof, and the said debentures both as to principal and interest shall be payable annually on the eighteenth day of December at the Bank of Montreal at the Town of Perth and shall have attached to them coupons for payment of said interest which coupons shall be signed by the Warden and Treasurer of the said County of Lanark.

6th. During the currency of the said debentures there shall be raised annually by special rate on all the rateable property in the County of Lanark the sum required for the purpose of paying the



Lanark County Roads.



amount due in each of the said years for principal and interest in respect of the said debt as shown in Schedule "A" hereto annexed.

7th. This by-law shall take effect upon the final passing thereof.

#### SCHEDULE "A."

Referred to in the foregoing By-law showing how the amount thereby required annually by special rate is apportioned.

Year.	Principal.	Interest.	Total.
1903... ..	\$2,200 00	\$2,437 50	\$4,637 50
1904 .....	2,300 00	2,355 00	4,655 00
1905 .....	2,400 00	2,268 75	4,668 75
1906... ..	2,500 00	2,178 75	4,678 75
1907 .....	2,600 00	2,085 00	4,685 00
1908 .....	2,700 00	1,987 50	4,687 50
1909 .....	2,800 00	1,886 25	4,686 25
1910 .....	2,900 00	1,781 25	4,681 25
1911... ..	3,000 00	1,672 50	4,672 50
1912 .....	3,200 00	1,560 00	4,760 00
1913... ..	3,300 00	1,440 00	4,740 00
1914 .....	3,400 00	1,316 25	4,716 25
1915 .....	3,500 00	1,188 75	4,688 75
1916 .....	3,700 00	1,057 50	4,757 50
1917... ..	3,800 00	918 75	4,718 75
1918... ..	3,900 00	776 25	4,676 25
1919 .....	4,000 00	630 00	4,630 00
1920 .....	4,200 00	480 00	4,680 00
1921... ..	4,300 00	322 50	4,622 50
1922 .....	4,300 00	161 25	4,461 25

W. A. MOORE,  
County Clerk.

W. J. ANDERSON,  
Warden.

#### By-Law No. 509.

(Amendment to the Foregoing.)

By-Law to amend By-Law No. 486 entitled "By-Law designating highways to be improved and toll roads to be purchased in accordance with the "Act for the Improvement of Public Highways" and authorizing the issue of debentures of the County of Lanark to the amount of \$65,000 for the purpose of raising the sum required therefor.

Passed February 11th, A.D. 1903.

Whereas it is desirable to amend By-Law No. 486 of this Council by striking thereout the designation of highways within the Townships of Montague and Elmsley North to be improved in accordance with the terms of the said By-Law and to provide in lieu thereof for the payment to each of the said townships of a certain sum to be expended in the improvement of highways within such townships.

Therefore the Council of the Corporation of the County of Lanark enacts as follows:

1. By-Law No. 486 of this council is hereby amended by adding to the fourth recital in the preamble to the said By-Law the words "and the grants of the townships hereinafter named."

2. The said By-Law No. 486 is hereby further amended by striking thereout sub-sections 1 and 2 of the 2nd section thereof and by inserting at the end of the said section the following:

2A. There shall be paid to the Municipal Council of the Township of Montague the sum of \$7,160.00 to be expended

in the improvement, in accordance with the regulations of the Public Works Department, of such roads within the said township as may be selected by the council thereof, which roads so selected and improved shall not form part of the County Highway System, but shall remain within the jurisdiction and under the control of the council of the said township.

2B. There shall be paid to the Municipal Council of the Township of Elmsley North the sum of \$4,000.00 to be expended in the improvement, in accordance with the regulations of the Public Works Department, of such roads within the said township as may be selected by the council thereof, which roads so selected and improved shall not form part of the County Highway System, but shall remain within the jurisdiction and under the control of the council of the said township.

3. The 3rd section of the said By-Law is hereby amended by inserting after the word "roads" where the same is found therein the words "and the grants to the said Townships of Montague and Elmsley North."

W. A. MOORE,  
County Clerk.

W. G. CAMERON,  
Warden.

#### ROAD CONVENTIONS.

One of the main factors in advancing the good roads movement has been the holding of meetings in the various municipalities. It has been customary for municipal councils, when seeking to effect an improvement in system of management, or in methods of carrying on the work, to request the Commissioner of Highways to address a meeting in the locality. With rare exceptions these meetings have been well attended and the interest manifested by all in road improvement has been most encouraging.

The following report, from the Amherstburg Free Press, of a meeting held at Essex, under the auspices of the Essex County Council, to which township councils and others interested were invited, is given not merely as an example of the interest taken in these meetings, but also for the sake of the many points brought up and discussed, and full of general information to all municipalities. The report is as follows:

The Good Roads meeting at the town hall, Essex, on Friday last, was a success in every particular. The meeting is the outcome of a resolution passed at the last session of the county council appointing a committee to arrange for a meeting of the county and township councillors and representative men at Essex to discuss the whole question so that the people of the county might understand the workings of the Good Roads Act in all respects. Invitations had been issued by the Warden to the

different municipal councils asking them to send delegates, and nearly every municipality in the county responded some sending their whole councils. At the morning meeting there were about 200 representatives, which number was increased to about 300 in the afternoon. It is questionable whether as good a representation of municipal men has ever before been held in this county. Those who attended were there to get information, and they all went home well satisfied with the meeting. Many came opposed to a county scheme, but went home in favor of it. The address of A. W. Campbell, Commissioner of Highways, in the afternoon, occupied nearly two hours and was a clear, practical and instructive one that pleased everyone. The morning meeting was called to order at 10 a.m. on motion of Messrs. Brett and Stone, Warden W. T. Wilkinson taking the chair. The Warden called on J. A. Auld, M.P.P., who explained the provisions of the Government's Good Roads bill. The bill gives the county power to inaugurate a county road scheme. The county council by this scheme would designate certain roads on which the money would be spent. After getting the scheme in shape and passing a by-law the municipalities are notified and they have three months in which to say whether they approve or disapprove of it. If less than one-third of the municipalities oppose the scheme, the scheme stands, but if more than one-third oppose it the matter is left to vote of the people. In the county's by-law the amount to be apportioned to each township will have to be designated. To spread \$100,000 over twenty years would mean about \$6,000 a year. Now a large amount of the money spent on roads is practically thrown away. He thought it a mistake for the county to drive the townships into their scheme without their consent, though he would prefer to see the county and the municipalities go together in the matter. It was not fair that Windsor and Walkerville should get out of paying something towards a scheme that would mean a great benefit to them. Windsor, if it could not pay any cash towards the scheme, might throw off the market fees it charges the residents of the county. He believed the county council were prepared to go ahead and carry out the scheme that will meet with the approval of the ratepayers and the endorsement of the municipal councils. In reply to Mr. Stone the speaker said the expenditure of \$100,000 would mean a rate of 80 cents on \$1,000 assessment for 20 years. The towns will have to stand their share of the expenses but get no

aid. He would not approve of spreading debentures over more than twenty years.

J. A. Buchanan said the county's equalization is \$1,300,000. A rate of  $\frac{1}{2}$  mill would raise \$6,500. That on a farm of 100 acres would mean \$1.50 a year. Then if another \$6,000 a year were spent for repairs to roads, that would mean another \$1.50, or \$3 a year on 100 acres.

Reeve Reaume of Anderdon thought the county councillors should be heard first and moved accordingly.

The Warden said they must rely on the feelings of the township councils. The bonded debt of the county is \$44,000 which requires \$4,000 a year. The question is are the people prepared for the extra tax imposed.

J. E. Stone was heartily in accord with the Good Roads movement and thinks that the county should take advantage of the Government grant. The Municipal World says the difference between good roads and bad roads is the same as the difference between a good suit of clothes and a suit of dirty rags. He thought the county council was willing to render its services if the municipal councils wish the scheme taken up. The tax would not be burdensome and the farms along the better roads would be increased in value. Farms in the vicinity of Essex on good roads sell for more than one-third of farms on poor roads though the land in both cases would be equal.

Ex-Warden J. A. Buchanan thought there were several reasons why the county should take up the scheme. We have the best county but the worst roads. Our markets are not the best so that farmers have to draw their produce. The county's bonded debt is the lowest in the Province, and  $\frac{1}{2}$  mill extra would raise enough in twenty years to pay off \$100,000. The county should not build the roads and then leave them. It will require another \$6,000 a year to keep them in good condition.

Ex-Warden A. Cole was in accord with Good Roads movement but wanted to hear the township councillors' opinions. The land here is hard to build roads on and we will find it very expensive.

R. R. Brett was heartily in favor of any scheme that would better the roads of the county. The roads in the central part of the county are not as good as those in the northern or southern parts. One reason he thought it would be better for the county to take hold of the matter, was that suitable road-making machinery could be purchased by the county, while no municipality would feel able to purchase

such machinery. When not using the machinery the county could rent or loan it to the townships so that they could build their other roads much cheaper and better. He was in favor of any scheme for bettering the roads. Before adjournment he would move for a committee to crystallize the views and opinions of the meeting into a resolution.

Alex. Reaume was in favor of good roads and if he had his way would name the Tecumseh Road as one of the roads to be assisted.

Ex-Warden William Price wanted to know what the Reeves had to say. He would like to know if each township can have the say as to the expenditure of their proportion. If the township's portion can be spent in the township and the council can designate the roads in that township, the county scheme would be all right.

A. L. Lafferty was in favor of any practical scheme that will meet with the approval of the people. The trouble with the county council is how to go ahead and solve the problem, not of good roads, but of better roads. There will be no objections to the scheme. It will be hard to formulate a scheme that will satisfy the people of this township without taking the front road, as that is the most travelled road in the township. The scheme depends on direct taxation and it is a question if the representatives would be justified in going ahead with it without consulting the ratepayers.

Mayor Wigle of Leamington found that the town would have to pay their share of the rate but receive no share of the money. This would not suit the towns. As he understands the Act, if Talbot Road were taken up, the work would be done up to the east end of



In Eastern Ontario.

Mr. Auld said from the road work done in the last thirty years in the county, he would say keep it out of the hands of the local men. Essex County is the only county that has not a county engineer. The work should be done under a county engineer. He thought it would be a mistake to leave the county scheme to the local municipalities.

S. T. Anderson asked if the township councils could qualify for the grant, in case the county fail to take it up, without first submitting the question to their ratepayers.

P. Coyle did not agree with the county taking over the roads, as it would be better to leave the maintenance to the municipalities. The municipalities should designate the roads as far as possible.

Essex Town and then commenced again at the western edge of the town. He wanted to know the benefits we would get from the act. Mr. Campbell should tell us how the Act has worked in other places. Suppose the Middle Road was taken would it be expensive to macadamize it? The town gives bonuses to aid industries in the town, whereas the people of the country surrounding the town really receive more benefit from them than does the town.

Thos. Weyburn did not know about Leamington, but he did know that whenever roads leading into Essex were helped by subscriptions the merchants of Essex have subscribed from one-third to one-half the amount subscribed in cash and work by the farmers.

Reeve Peterson of Gosfield South wanted to know if the money is to be



distributed according to the assessment of the different municipalities.

The chairman said the Province will pay \$23,000 to the county; the county will formulate the scheme and designate the roads to be benefited. The by-law shall specify how the money is to be spent.

Mayor Brien of Essex said when he was a member of the County Council, several years ago, he introduced a resolution for the expenditure of \$250,000 on the roads of the county. That the road and bridge fund be done away with and the amount used in paying off the debentures on this amount. Unless the people give and take a little, no scheme can be formulated. He would continue the scheme from year to year, till all the roads in the county were got in first-class condition. He disagreed with the proposition to leave the matter to the municipalities. Through a lack of good roads the people of this county have lost more than the cost of making good roads.

Reeve Plant of Maidstone came with no authority from his people. If they go into the scheme it will have to be submitted first to the people. If the Middle Road is made a macadamized road it would be objected to by some because the side roads are not helped. He thought the only way to keep up the side roads is by road work.

Reeve Brush, of Malden, asked if there was a scheme whereby the front road people, who get the most benefit, should pay the most for it, as is done in drainage matters. Malden had done away with the statute labor years ago, and got more work done for half the money than they used to spend. Malden councillors look after the scraping of the road without any commission.

Reeve Peterson of Gosfield South, thought a scheme of this kind should interest us all. Everybody this year wants to know what are we going to do with our roads, and as the Government has passed a law that will allow people to collect damages from municipalities for injuries sustained on account of the condition of the roads, it was in the township's interests to have the roads put in good shape. If the council could build a standard road and collect it from the owners, as a drain, it would be a good thing. Enough money is spent each year on the Division Road which would build a mile of good road, and if this were done, in a few years they would have a first-class road of it. It is very plain that good drainage is required. He was satisfied his township would be willing to do something to receive the county's share of the Govern-

ment grant. Gosfield South abolished statute labor last year, levied one mill in its place, spent the money thus received on the roads and received far more benefit for it. His township had 3,000 days road work, and they had collected about \$1,200 from the rate. If the old road work system were done away with it would be better for the roads. He thought if the designation of the roads were left with the local municipalities, it would be better but the scheme should be encouraged.

A motion was made by Councillors Brett and Coyle, for the appointment of a committee to draft a resolution crystallizing the views and opinions of the representatives. Such committee being composed of J. E. Stone, J. A. Buchanan, P. Coyle, W. Price and A. Reaume, of the county council; Mayor Brien, of Essex, Mayor Wigle of Leamington, and the Reeves of the townships.

The motion carried, and at 12 o'clock an adjournment was made till 1.30.

The afternoon meeting was opened at 1.30, by the Warden, who at once called upon A. W. Campbell, the Commissioner of Highways. Mr. Campbell expressed his pleasure at again having an opportunity to visit Essex County and discuss Good Roads. It was his duty to visit different sections of the Province and explain any legislation in his department and give the benefit of his experience. For 12 years he has had charge of building roads, yet he did not consider that he knew all about road-making. There are 800 municipalities in the Province, and if he had to visit every one of them and look into their affairs it would take three years for him to get around to them all. He would like to visit them all but as he cannot, before going to a place he tries to find out what the people are prepared to do, if they are willing to spend more on their roads. If you feel that your methods are as complete and economical as they can be made, if you feel that you cannot spend more than you have been doing, then it is a waste of time to have the meeting.

In Essex County it is a little harder to make good roads than in the eastern part of the Province, on account of the flatness of the land, and the difficulty to drain it. In the past it has been of more importance to the people of the county to take up other matters besides roads. It was necessary first to get the lands drained, and the people have gone about that work first and expended thousands of dollars to carry out large drainage

schemes. Now they have large, serviceable outlets, without which it was impossible to drain the lands, and you are now looking after the other part—improving the roads.

In Essex County there are about 1,200 miles of roads and the system employed in the past in other counties has been employed here, viz., the statute labor system. That system in its time was the best that could be adopted for making roads in a new country. It was a good system in its day and he believed it wrong to flippantly find fault with it. He was not here to involve the people of Essex County in an expenditure that would unfairly burden them, but was present to advise with them for the betterment of roads so that in every year the work that is done will be permanent, and in a few years the county will have as good a system as can be made.

Many waste lots of time and hundreds of dollars in roadmaking without first studying the elementary principles of roadmaking. In one township in the county statute labor has been abolished, in another it is being commuted, while in others it is still in force. The plan should be uniform in the county. If Malden's statement is correct why not have statute labor abolished in all the townships. Some think by the county taking over certain roads that it would mean the building of some new roads. That is a mistaken idea. All that is wanted is to improve the roads that we have.

In the last ten years in Essex County there have been laid out on the roads 259,990 days of statute labor in addition to \$245,711 spent in cash on the roads, a total of half a million dollars in cash or its equivalent. For this amount you should have over 700 miles of macadamized roads equal to the best macadam roads. Your roads are as bad as they were ten years ago, so that it is the people's duty to meet and devise some plan to remedy it. If a farmer is going to build a pigpen he figures out all the details of the building, while this far more important matter is neglected. Pathmasters differ as to the width a road should be. One year the pathmaster does certain work on the road, the next year a new man is appointed and he having different ideas about roadmaking covers up or tears down what his predecessor did, so that our system is one of building up, tearing down and building up again. The fellows who do not do their statute labor are the principal ones who uphold the old statute labor system.

The time has come when the people of this county must meet this road question fairly and squarely. They must rise above local and personal jealousies and go about it in a business way. Take you county plan, pick out your roads, figure the cost and spread the payment over a term of years so it will not be a burden. As the people of Essex County have laid out their drainage schemes so lay out your road schemes. If the half million dollars that have been spent in the county in the past ten years had been spent at once you would have had 250 miles of macadam road, at the average cost of \$1,000 per mile. The drainage law applies to every person in the township, and so do good roads. The cost of the latter should be borne the same as in the former.

The Government set apart \$1,000,000 for bettering roads, one-third of which amount is really paid by the cities. Then they leave it with the county council to form a plan so that the towns should pay their share. When the Act was under consideration, many councillors and county councillors were called in consultation. Some opposed leaving the matter entirely in the hands of the county council, so the Government made the measure an alternative one; if the county council do not take advantage of the grant the municipal councils may do so. The people have to the end of this year to say whether the scheme shall be taken up by the county or by the municipalities. Municipalities that qualify for the grant are subject to the same conditions as the county. He suggested that the Reeves of the townships meet the county council at the June session, take the county map and agree upon a scheme. When the Government framed the Act they had in view that the roads should be better in proportion to the mileage of the township. He would designate roads or pieces of roads that are the main arteries to the markets, make good, or better, the roads where the traffic is heaviest, leading to the business or market centres. A back concession can be taken, if wished and five miles of it made better. It would be preferable to have a connected system if you can make it so, but if not make the system so you can later make it a connected and complete system.

The Department ask that when the plan is formed and by-law passed, that a copy be sent to the Public Works Department. The regulations provide for the employment of a competent engineer. The certificate of the County Commissioner or engineer as to the completion of the work will be accepted,

as to the manner of doing the work and expenditure of money. If a road in the plan only requires to be drained to put it in good condition, that would come under the regulations. If he were asked what was required to better a road he would say, first drainage; second, drainage; third, drainage. Drain the foundation; place a tile where required in the low spots; put good ditches on either side with a good outlet, drain the surface by crowning. Commence on the important roads, then take up roads leading to them. Let the county take over 200 miles of roads and designate those. That will leave over 1,000 miles for the townships to look after.

The county councillors are elected by the ratepayers, are responsible to them and would be as anxious to have the work done right as the municipal councillors. Suppose this county raise \$200,000. Of this amount, \$23,000 would come from the Government, about \$22,000 from the towns and villages and the balance would come from the townships. The county council with the township councils, could agree on the way to expend this sum, whether by acreage or assessed valuation. The increase in your rate would mean about \$3 per year on an assessment of \$3,000. The roads thus taken over would really be the roads that now receive the most attention from the township councils, so they could devote their time to the other roads. This extra tax might be met by commuting the statute labor on these roads at so much per day, and using that in paying off this rate. On 200 miles it would mean 5,000 days of statute labor which would more than half pay the county rate.

By having the money properly expended he believed it could be done so that the cost would not be more than 50 cents a year on a \$1,000 assessment. Employ a good, practical man, not necessarily a civil engineer, to take charge of the building of the roads. In Hastings County they have a man who was formerly a contractor on a railway, and is a practical man in every respect. In that county they use gravel boxes that carry three yards of gravel and haul five of those by a traction engine, or fifteen yards, in a train. It costs about \$5 or \$6 a day for the engine, while if 15 teams were engaged at \$3 a day, it would cost \$45 to do the work.

Crushed stone roads in the eastern part of the Province were being built at \$600 per mile where it costs more for material than it does in Essex. These roads are 8 feet in width, 10

inches deep in the centre and 5 inches on either side. He would use good clean gravel where it can be obtained. When gravel or stone is laid on a road, it should be rolled with a heavy roller. Before broken stone is put on the road, clean off the mud and put on the large broken stone with a layer of the fine dust, then roll it with a roller. Horse rollers cost about \$90 a ton, so that a five-ton roller will cost \$450.

One reason he would prefer that the county take up the scheme is, that they could purchase a heavy roller and other machinery and do all the work in a uniform way. The county council can do the work in a little more comprehensive way than if township councils would do it. They could arrange for better rates with the railways than a municipality can. The county can arrange for a better system of supervision. In Hastings County they have one supervisor for all the county roads. When the large roller is not in use it can be loaned or rented to the township or town to build their own roads. He advised getting the township and county councillors together as soon as possible, so they could form their plan and pass the necessary legislation at the June session.

Ald. D. H. Bedford of Windsor could not commit the council of Windsor to anything and could only express his personal opinion. For the benefit that would accrue to Windsor by the betterment of the roads in the northern part, the city should take much interest in the scheme and should assist in some way, contributing as much as either Essex, Sandwich East, or Sandwich West. He had always advocated that Windsor should help to improve the roads leading into the city.

C. E. Naylor wanted to know if the law provided that the township council might commute the statute labor on the lands along the roads improved up to \$1 per day and use it in meeting the extra rate. Mr. Campbell replied in the affirmative. The amount in the commutation could not exceed \$1 per day. Mr. Bedford asked the size of crushed stone best to be used on roads. Mr. Campbell said they should use large size stone for the foundation and crushed trap rock on the top. The foundation must be thoroughly drained.

Ald. Noble of Windsor wanted to know if there was anything that could be used as a top dressing in place of the powdered stone and that will not go into dust. Mr. Auld said an experiment was tried in Amherstburg last year by sprinkling crude oil on the fine crushed stone that was put on



Murray street in that town. The crude oil was brought from Pelae Island. That section of the street was the best in town this spring.

Calvin Cowan, councillor of Mersea, said his council were greatly interested in the scheme but were at a loss to know where they were at. His township council had come to the conclusion that they could take part of their share of the scheme and spend the money in their own township to the best advantage. He had also held to that opinion, but he would go back home with changed notions, and is now in favor of the county taking up the scheme, as they can do so to much better advantage and could purchase proper machinery. He understands the money can be spent in municipalities according to their acreage, and if that concession be granted, the objections made in his township would be removed and he believed the people would support it. The people of Mersea Township use the roads almost exclusively in their own township on account of having Leamington for a market town.

John Webster, ex-Reeve of Sandwich South, had always advocated having the townships co-operate with the county and take up a county scheme. He wanted to see the county council take up the scheme, and was satisfied the county councillors would carry it out to better advantage. With a county grant a few years ago of \$200 they had graded six miles of Talbot street that is to-day the best section of that street. The money was spent judiciously.

W. S. Sunderland had come out to get advice and had written out a number of questions to ask but Mr. Campbell had covered the whole question thoroughly, and his questions had all been answered. He had not believed in handing the roads over to the county, but he was afraid he would have to change his views. He thought the old toll road from Amherstburg should be taken up. The town had paid \$20,000 and Malden Township \$6,000 to build that road.

Peter Corbett, ex-Reeve of Maidstone, thought the matter should be handled by the county. Thos. Wayburn said good roads meant money in every man's pocket who had any teaming to do. If he can only draw half a load on a bad road, he is losing money. He believed the towns should bear their share of the cost as they were benefited. John Hopgood advised the people to go slow about incurring any large expenditure.

The committee on resolutions at this juncture returned and presented the following resolution:—

Moved by Reeve Wilcox of Rochester, seconded by Reeve Peterson of Gosfield South, that, after hearing Mr. Campbell we approve of the Good Roads scheme and would recommend that a meeting of the members of the county council and of the representatives of all the municipalities, towns and cities meet at Essex at the call of the Warden, between now and the June session of the county council to discuss and decide whether the scheme should be taken up by the county council or township councils and also decide on the amount to be raised.—Carried by a unanimous vote.

O. J. Wilcox had no hesitation in saying that he was heartily in favor of good roads, but he would hesitate to agree to the issuing of debentures for \$100,000 without first consulting his electors. J. A. Coulter was in favor of good roads, but could not say what the people of his township would say, though he thinks they are progressive enough to agree to a scheme for bettering the roads. Some years ago they gravelled the Malden road by statute labor and voluntary work by the people of township, and that road is one of the best in the county. He thought the resolution was proper as by that time they can get the feeling of the ratepayers in their townships.

Oliver Reaume was in favor of good roads. They have the statute labor system in Anderton. He would favor letting the county take up the scheme and spend double the Government grant on the roads, but would oppose spending \$200,000. The Government might be induced to make a further appropriation. He favored the county taking it up, but each municipality should have the say as to on what the roads money is to be spent.

C. L. Wingrove had studied Mr. Campbell's plan of building roads, and they met with his approval. Some of his people had an idea that they could not get the Government grant, but it seems quite easy to get it. He would not like to see the county fooled out of the grant.

Dr. J. O. Reaume, M.P.P., was most anxious to find out the feelings of the people of North Essex, so he could represent them to better advantage. The scheme is certainly a laudable one if it can be carried out, but it requires careful consideration. He had asked different members at Toronto and some did not consider it in the interests of the county to take it up. He found a lack of methods and systems in the townships of the county in doing road work. He can point to pathmasters who do their duty. He was anxious to see the roads bettered, but would ad-

wise the people not to be carried away with the idea that another million-dollar grant will be forthcoming.

Mayor Wigle of Leamington felt better than he did before hearing Mr. Campbell's address. He thought the committee had passed a sensible and reasonable resolution, but the next meeting should begin at 10 o'clock in the morning. Mr. Campbell deserves a great deal of credit for his address.

Mr. Auld had voted for the million dollar grant in the interests of the County of Essex, and he hoped the county would take advantage of it. He was glad the people were satisfied with the measure, and thought they pretty nearly understood the act now. He would favor taking advantage of

than they do. We have arrived at a time when we must change our methods in roadmaking. The question of free rural mail delivery hinges upon good roads, also the centralization of schools in townships.

Moved by Mr. Brett, seconded by Mr. Stone, that this meeting desire to place on record its appreciation of the very able and instructive address given by A. W. Campbell, Commissioner of Highways, and that the thanks of this meeting be tendered him for his visit. Mr. Brett as father of the resolution in the county council had brought about the meeting, and he had been rather anxious as to its outcome. He was pleased with the good turnout, and hoped that the good that might re-



County Road of Lanark.

the grant now, and spend the money this year.

Mr. Campbell explained clause 8 of the Good Roads Act, which provided for the certifying to the work and procuring the money. Any person who is competent to do the work will fill the bill so far as the Department is concerned.

M. Conn, Vice-President of the Windsor Board of Trade, was greatly interested in better roads. Windsor would encourage anything that was for the benefit of the city, and he thought would do their share. He thought \$200,000 would be required to put the roads in good condition.

A. McNee was pleased with the whole spirit of the meeting. He didn't think the Government had gone far enough; the grant should have been five millions instead of one. In Michigan they are getting two and a half millions in taxes from the railroads. We should take advantage of what we have, and the railways should contribute more

sult from their attendance would more than compensate the delegates for the time spent by them. Mr. Stone was also pleased with the attendance and hoped the scheme would be taken up and carried out. The motion carried.

On motion of Mayor Wigle and Dr. Reaume a vote of thanks was passed to the chairman, who responded, and at 5.45 the meeting was brought to a close.

## THE SCIENCE OF ROAD- MAKING.

Roadmaking is a science, a branch of engineering, the difficulties of which are not usually appreciated. It is a common expression that "anyone can make a road." Which merely indicates that the average man knows so little about road construction that he does not realize how much there is to know. If it is true that anyone can make a road, it

is also true that anyone can build a house, a bridge or a steamship. "Anyone" can do these things, but in most cases at a great waste of money and labor, and with very inferior results. For centuries in England, it was left for anyone to make the roads. It was not until McAdam and Telford appeared, but one century ago that the people in England became convinced that "anyone" could not build a road. This work was then placed in the hands of expert roadbuilders and the transformation has been nothing short of wonderful.

In too many townships of Ontario "statute labor" means that once a year the rate-payers gather to make roads under the direction of "anyone." They plow and scrape the mud and pile on a ridge of gravel, after violating every rule and principle laid down by "Macadam." After doing everything Macadam told the people of England not to do, the result of this statute labor is called a "macadamized road."

Among the earliest roads of which we have definite information were those built by the Romans, chiefly as military highways, leading east and west to the remote provinces, from which arose the proverb, "All roads lead to Rome." So substantially were these roads built, of layer upon layer of stone and concrete, three and four feet in thickness, that many of them still remain, and are commonly believed by the peasantry of Spain and of other countries of Southern Europe, to be of supernatural origin. These roads were built at an enormous waste of money and labor, and, while of the greatest durability, they lack the first essential of modern construction—a properly balanced union of economy and efficiency.

For several centuries after the downfall of Rome, roadmaking became a forgotten art. In France during the eighteenth century, under the engineer Tresauguet, road construction was revived, but on very different principles from those followed by the Romans. The type of road built by the French engineer was that introduced into England by Telford, and consisted of a foundation of large stones, laid on edge and carefully shaped, upon which was placed a coating of finer broken stone. Early in the nineteenth century, McAdam advocated and constructed in England a still more economical design, in which the foundation of large stone was omitted, but greater care was given to drainage and roadbed. McAdam's system is that most commonly followed to-day, with a number of important alterations consequent upon the introduction of roadmaking machinery.

In the time of McAdam the best method attainable was to break stone

by hand, which was then placed loose on the roadway and left for traffic to consolidate. The progress of consolidation was slow, during which a considerable amount of the stone was forced into and mixed with the earth subsoil, injuring the consistency of the road. Under present methods, by means of a crusher, stone is broken much more cheaply than it could be done by hand.

Stone dust and chips (screenings) are created in the process of crushing, which are used to fill the voids, instead of waiting for this to be produced by traffic, or allowing the clay or loam from beneath to be forced up among the stones. With a road roller the road metal is made thoroughly compact, forming a strong, waterproof covering over a firm subsoil. The result is that more perfect work is done in a few days and at less cost than the methods of McAdam or Telford would accomplish in several months. The main features of present day roadmaking, which are of recent introduction, are:

(a) The use of grading machines for forming the earth subgrade and open drains.

(b) The thorough drainage of the soil underlying the road so as to make a strong foundation.

(c) The use of a roller to consolidate both the earth foundation and the surface layer of stone or gravel.

(d) Where broken stone is employed, the use of a crusher to prepare the metal, instead of breaking the stone by hand.

(e) The screening of broken stone so as to grade it, for application to the road in layers according to size.

## THE ROAD SURFACE.

The road surface of gravel or broken stone is, by many, supposed to be the chief part of the road. As a result of this impression, gravel and broken stone are frequently applied to the roads very lavishly, but only to be lost in mud in a year or so. Townships which at one time had an abundance of gravel, are now facing the fact that their supply is exhausted. The reason of this waste of road-metal is that the foundation of the road, the natural soil, has not been properly drained, graded and consolidated, to receive the surface covering; and also that this surface covering has not been cared for after being placed on the road.

To properly apply gravel or broken stone requires that, after providing for drainage, and grading and crowning the earth subsoil, this earth road shall be



placed in a smooth and compact condition, and the best means of accomplishing this is by the use of a roller. Having thus prepared the foundation, the gravel or stone coating should in turn be consolidated with a roller. In the absence of a roller, and depending upon traffic to consolidate the road, both the earth road and the metal covering should be kept in shape, chiefly by the use of a rake, until both are firm and compact.

A road surface of gravel or broken stone performs various services. The ordinary dirt road of clay or loam alone ruts readily, softens quickly after a rain and has little supporting power. A well-compacted layer of gravel or broken stone over it, distributes the concentrated wheel load over a greater area of subsoil; it does not rut readily, and affords good surface drainage; it gives a smooth, hard, wearing surface; water does not easily penetrate it so as to soften and reduce the supporting power of the subsoil.

The depth of gravel or stone to be used must vary with the quality of the material, the amount and nature of traffic on the road and the nature of the subsoil. A dry, compact and stony subsoil needs less metal than does a plastic clay, difficult of drainage. A definite rule cannot be laid down to accurately meet all conditions, but from six to twelve inches of well consolidated material will afford a sufficient range to accommodate most circumstances. Ordinarily, ten inches of metal should accommodate the heaviest traffic to which a gravel or broken stone roadway can be economically subjected.

Wagons with a hopper-shaped opening between the front and rear axles, are now made expressly for drawing gravel, and distributing it over the road. The opening of the hopper is controlled by a lever beside the driver. The metal can be distributed to any required depth, after a little experience, by regulating the extent to which the hopper is opened.

For screenings especially, in distributing them evenly over the stone, these wagons are particularly useful. A number of these wagons, coupled together, and drawn by a traction engine, affords one of the cheapest methods of hauling gravel or stone for a considerable distance, under certain conditions.

Teams and teamsters should be hired to haul gravel by the load or cord, not by the day, and the size of each load should be specified. Care should be taken at the pit to see that only suitable road metal is put in the wagons, and that clay, sod, large stone or very sandy material are excluded.

A notable defect of most country roads is the flat, or even concave surface. Others present the opposite extreme, and are so rounded up as to be dangerously high in the centre, making it difficult for vehicles to turn out in passing. Roads must be crowned sufficiently to shed water from the centre, to the open drains at the side, otherwise water will stand in the roadway, soak into it, soften and cause rapid wear, resulting in ruts and holes; but a crown higher than is necessary to properly drain the surface is also objectionable. The smoother and harder the surface of the road, the less crown is needed.

The amount of crown should not be more than sufficient to provide for surface drainage. A sharp crown tends to confine traffic to the centre of the road, and also in turning out, the weight of the load is thrown on one pair of wheels, in such a way as to rut the side of the road. The shape of the crown is a matter on which road experts differ, but with the class of material available for roads in Ontario, and the methods and plans of construction, a form as nearly circular as possible will be found serviceable, and most easily obtained.

From the edge of the open drain the graded portion of the roadway should be crowned with a circular rise of one inch to the foot from side to centre. That is, a driveway twenty-four feet wide would be one foot higher at the centre than at the side. This amount of crown may at first appear excessive, but with gravel roads and roads metalled with the quality of stone commonly used, is not more than enough to provide for wear and settlement consistent with good surface drainage.

The height of the road above the level of the adjacent land need not be greater than is sufficient to provide against the overflow of storm water, which should always be guarded against. The depth of the open drain must vary according to the amount of fall and the quantity of water to be provided for; also according to the sub-drainage needed and provided. When tile sub-drains are used the open drain can often be shallow, in which case the width of the graded roadway can be narrowed, there being no danger of accidents such as are caused by a deep trench at the roadside. The tile drains should be placed below severe frost, and usually a depth of three feet will answer.

## ROAD DRAINAGE.

Good Drainage, and Good Roads, are, in effect, almost equivalent. A road that is built and maintained with a view to good drainage is almost certain to be a good road. If this is done, the road surface will be kept hard and smooth and sufficiently crowned, so that water will not lie on it in depressions or ruts, but will flow immediately to open drains at the side. These open drains will have a regular and constant fall to a free outlet. Further than this, the underflow, or subsoil water, will be removed, where necessary, by tile drainage. The method and extent of drainage must depend largely upon the character of the soil over which the road passes; clay, loam,

A drain without an outlet is useless—or worse than useless. If there is not an outlet, the water is held in elongated ponds by the roadside, to soak into and soften the travelled roadway. This water is drawn up into the entire roadway by capillary attraction, just as a sponge will absorb water and hold it in all its pores.

The introduction of graders, wheeled scrapers and modern road machinery requires that a roadway should, in order to construct it economically without hard labor, be such as the implements will readily form. For this reason, deep, open ditches, with sharp angles and narrow bottoms, are not now suitable; but instead, a cross-section of road should show gentle curves, the rounded surface of the road not



Too Flat.

gravel, sand, swampy, springs, flat, undulating, are all terms suggesting conditions that modify the plan of drainage.

Water should be disposed of in small quantities, along natural watercourses. If carried long distances and gathered in large bodies along the roadside, it gains force and headway, resulting in extensive wash-outs, and is in every way more costly to handle. It should be taken away from the roads as quickly as possible, for an excess of water is the great destroyer of roads.

The drainage usually found on existing roads consists of open ditches on each side of the graded portion, with a depth of about eighteen inches. They are frequently carried through rises of ground, past natural watercourses. Little attention is given to the regularity of the grade in the bottom, or to the amount of fall, as evidenced by the varying depths of stagnant water at wet seasons. The object of these drains was more to procure earth to raise the centre of the road above the water line than to lower the water.

sharply defined from ditch. The latter should be about two feet wide in the bottom, where a wheeled scraper can work, and about eighteen inches in depth.

The best practice does not direct that the old open drains should be deepened for the purpose of draining the subsoil. Deep, open drains are expensive, dangerous and unsightly, and the excavated earth generally does more harm than good to the road when used to round it up, especially if piled on top of gravel or stone. When the combined cost of construction and maintenance is considered, a tile drain laid under the bottom of open drains is cheaper and more serviceable.

It may be accepted as a general rule, that roads tiled without gravel are better than roads gravelled without tile. All roads except those on pure sand can be improved by tile draining. A single line of tile, if placed about three feet below the bottom of the open drain, if the graded portion of the road is about twenty-four feet wide, will accomplish nearly all that tile drainage will do. If one side of the

road is higher than the other, lay the tile on the high side so as to intercept the subsoil water as it flows down the slope. A four-inch tile meets most conditions, but the size will depend on the length of the drain and the amount of water to be carried away. Care must be taken to give the tile a uniform grade, so that there will be no depressions. If possible, give a fall of at least three inches in one hundred feet. The cost will be about fifty cents a rod. The work, if properly done, will be a permanent and substantial improvement to the road, and will save many times the cost by lessening the amount of gravel needed on the road.

Municipalities need not undertake to at once underdrain all their roads in this manner, following the one rule. The preferable plan is to place these drains where they are evidently needed most, in low-lying sections, where water is seen to remain longest on the surface in the Spring or after a heavy rain, where springs have a tendency to appear, or where the ground is found to be cold and wet during the summer.

The name "macadam" is commonly applied to any road surfaced with broken stone, and in this respect is a very unfortunate misnomer. It is the neglect to provide a dry subsoil that is the greatest cause of the unfortunate condition of roads throughout Canada to-day. Roads which are not well drained are but a repetition of the English roads as they existed before the time of Macadam—they are the roads which the system of Macadam displaced. A roadbed in which sub-drainage is not sufficiently provided is the opposite of a macadam road.

The importance of drainage cannot be too thoroughly impressed. Clay in thick beds, when dry, will support from four to six tons per square foot of surface, according to the quality of the clay. If but moderately dry it will support from two to four tons only per square foot of surface. If the clay is wet and soft it will yield to almost any load. Gravel, if well compacted, forms a much stronger roadbed, is less yielding to the action of moisture, and for this reason, even for a thin surface coating, strengthens the road somewhat. But the real strength of the road must lie in the subsoil. Vegetable mold and alluvial soils are weak, having a sustaining power of only one-half to one ton per square foot, and for this reason it is well to

remove such soils, securing if possible, a gravel, clay or sand foundation.

A dry subsoil becomes of greater necessity in a cold and humid climate, such as prevails throughout Ontario for a considerable portion of the year. The injury done to roads by frost is caused entirely by the presence of water. Water expands on freezing, and the more there is under a road and above the frost line, the greater is the injury. In freezing, the particles of soil in immediate contact with the water are first compacted. When room for expansion ceases within the body of the soil itself, owing to its saturated condition, the surface is upheaved. When thawing takes place, the subsoil will be found honeycombed, ready to settle and sink beneath traffic. It is, therefore, of the utmost importance that the soil should be relieved of all water of saturation as quickly as possible by under-drainage. The impassable condition of the roads during spring, often axle-deep with mud, is to be attributed very largely to a wet subsoil which has been honeycombed in this manner.

The making of a strong foundation thus resolves itself largely into a question of under-drainage, and the means whereby under-drainage is obtained must be adapted to the manner in which water finds its way under the road, and the nature of the soil. A soil retains in its texture, by capillary attraction, a certain amount of water. In the case of a plastic clay soil, which will absorb nearly one-half its weight and bulk of water, the water retained in this way may be the cause of injury. In the case of gravelly, sandy or other porous soil, it is necessary to remove only the water held by hydrostatic pressure in the foundation of the road. The effect of this is, that, with a clay subsoil, under drains are nearly always beneficial in securing a strong foundation, and are necessary for traffic of even moderate degree. With porous soils, on the other hand, the necessity and means of drainage will depend upon the height to which the water rises in the foundation, and the direction from which it comes. When a strong foundation is needed these under-drains should be three or four feet below the surface of the subsoil.

Their location with respect to the road should be varied with circumstances. The most effective type of drainage employed is a system in which there is a tile drain on each side of the roadway underneath the open gutters, with V-shaped drains at inter-



vals from the centre of the roadbed to the side drains. From this the scale descends to drains at the side of the roads only; then a drain at one side only, or in the centre of the road; then only an occasional drain at springy or damp points.

It is of advantage to understand the manner in which underdrains act in different cases. With porous soils, in which the water rises under hydrostatic pressure, the water enters the tile from below. Just as water rising in a vessel finds an outlet in the sides or flows over the top, so the underdrains supply the necessary outlet for this excess moisture at a proper depth from the surface; it "lowers the water line."

With clay the process is different. Absorbing and holding as it does, like a sponge, a large quantity of water, drains are less effective, but none the less necessary. The cracks and fissures which appear throughout the surface of a baked soil during the summer drought, afford a clue to the action of underdrains upon the soil. As the clay yields up its moisture, it shrinks, is torn apart. These fissures, commencing at the drain, spread in different directions, and each fissure thus becomes a new drain leading to the tile. This process goes on, the fissures become filled with sand, vegetable and other porous matter, so that they assume a degree of permanency, and in clay soils, underdrainage is more effective after several years than at first.

## GRAVEL ROADS.

Gravel has been very largely used throughout Ontario for surfacing township roads, and the streets of towns and villages. Wherever this material is plentiful, clean, and of a good quality, it makes a useful and serviceable roadway, especially for light traffic. Many townships are using it lavishly and wastefully, apparently believing that the supply is inexhaustible, but a number are already discovering that they have very little left, and that they will be obliged to secure road-metal, either gravel or stone, by rail from outside their municipality.

Gravel consists principally of a mass of fragments of stone, rounded and worn, having been transported a considerable distance by water and ice, the

pebbles representing the hardest and most durable bits of the rock from which they were detached. With it is commonly mingled a variable quantity of boulders, sand, clay, and earthy matter. The rounded, water-worn character of the pebbles composing the gravel does not permit as perfect a bond as is the case with a road covering of crushed stone, in which the sharp angular sides take a firm, mechanical clasp.

## Distribution in Ontario

In the western portion of the Province gravel is made up principally of limestone, but in Eastern Ontario, it is more largely of granite, blue limestone, and harder rocks. While of a somewhat more durable quality in the eastern portion, it is more generally distributed in the western counties. Huron and Bruce are especially favored in the matter of gravel deposits, while it is very plentiful in Oxford, Perth and Wellington. Most counties have a moderate supply, but there are exceptions, as in Kent, Norfolk, Haldimand, Welland, Lincoln and Wentworth. Stone quarries at Amherstburg, on the Grand River, the Niagara River, and in the vicinity of Hamilton, help to make up the deficiency, but the absence of cheap roadmaking material has much retarded road improvement in Kent and in the Niagara Peninsula, following the rule, that land most desirable for agriculture is apt to be most deficient in materials for roadmaking.

In Eastern Ontario, while plentiful in many districts, gravel is totally absent from others, and is not at all evenly distributed. Where there is no gravel, however, stone is usually available, and numerous townships are supplying themselves with rock crushers. From the vicinity of Belleville on the Bay of Quinte, along the St. Lawrence to Cornwall and the Township of Charlottenburgh, thence north and west to Georgian Bay and the Ottawa River, stone quarries are numerous, while gravel, though not always plentiful, is apt to be of a superior quality. Where it is to be obtained within easy hauling distance, it is, undoubtedly, a most valuable material for use on country roads, and on many of the little-travelled residential streets of towns. In localities where gravel is not within easy hauling distance it will be advisable to consider the use of other material: since gravel, if not found in the immediate locality, and therefore expensive in transportation, will frequently be found less economical in final cost than a better, though higher priced, stone.

## Selecting Gravel

The largest stones in the best quality of gravel should not exceed one and one-half inches in greatest dimension. The remainder should be of varying sized pebbles, each in proper proportion from the largest to the smallest, so that there will be the least amount of void, and the fragments in contact with one another at as many points as possible. If there are large stones in the gravel, they are apt to work to the top under the action of frost and traffic, even after the roadway has become well consolidated. In the dry weather of summer, the moisture is evaporated from the surface of the road, the fine stuff contracts, wheels and horses' hoofs disengage the larger protruding stones, and from merely making a rough sur-

contains an excess of fine stuff, clay or loam. Clay and loam in gravel aid in producing a pleasant road when the weather is neither too dry nor too wet. They absorb water readily, and in rainy weather the bond dissolves, the road becoming soft and muddy. Containing so much water, the action of frost on clay is very marked, so that when clay is mixed with gravel, the road ruts easily in the spring, and the gravel may even be cut through.

Iron oxide, when coating the fragments of gravel to such an extent as to cement them together, is one of the best binders, and such ferruginous gravels make an exceedingly durable and waterproof road covering. A finely powdered silica, resembling clay in appearance, is an excellent binder. Limestone gravels, or others which contain fragments of certain kinds of shale, or iron-



The Rake is Needed.

face, they are soon rolling loosely on the roadway. With stone greater than one and one-half inches in diameter, it is difficult to keep the road from thus "unravelling," in the period of hot weather.

On the other hand, if the gravel is too fine, it is apt to partake of the nature of sand, and may not bind readily. Pit gravel is usually better than lake gravel, as the latter is smooth and water-worn, while there is a deficiency of fine material; the rougher and more angular fragments of pit gravel, and the presence of fine stuff in proper proportion, enabling the pit gravel to bind more perfectly.

While fine material, even a certain amount of powder, is of value in assisting the binding and cementing process, yet one of the most serious faults of gravel in Ontario is that it

stone, pulverize readily under the action of traffic and weather, and these form a dust, which is vastly superior to clay as a binder. For this reason a softer limestone, if clean, may be much superior to harder varieties of rock containing quantities of clay. The fine powder of certain stones, when wetted and compressed, forms a weak cement which causes the particles of gravel to adhere to one another with considerable force.

The test of actual use on the roads is the best means of determining the relative merits of different gravels, but in this, consideration should be given to length of time each has been in service, the care taken in putting them on the road, the attention to maintenance and repairs each has received, the nature of the soil on which each is laid, the manner of grading, draining, and preparing the foundation, and the amount of

traffic to which each is subjected. The sound made by metal tires in passing over the road is also a means of judging the quality of the gravel. A continuously smooth and gritty sound is most favorable; if the gritty sound is absent, the gravel contains too much earthy material, while an interrupted, intermittent sound, indicates the presence of large stones.

### Finding and Purchasing Gravel.

In searching for gravel, the clearest indications are usually to be found along the banks of streams, where any extensive strata are apt to be exposed. A post-hole auger affords a convenient means of making tests for gravel over the surface of the soil, but the best implement is a simple form of drill. There are cases in which a gravel bed may be entered at the level of a stream bed, and water is thereby obtained for washing the metal by natural drainage, affording a cheaper means of freeing it from sand and earthy matter than by screening it. Gravel is still being deposited in drifts and bars by the agency of streams; this will be found, to partake of the character of the pit gravel of the locality, but generally will contain less clay, although sand may easily be in excess. This is usually one of the best sources, as the gravel can be washed by natural drainage. Lake gravel is often a good metal, but varies greatly. It is apt to be slatey, and undesirable in quality. It will be free from dirt and clay, but may contain sufficient sharp sand to secure consolidation, especially if a roller is used. Gravel which retains a perpendicular face in the pit in the spring, and shows no trace of slipping when thawing out, may generally be assumed to be sufficiently clean and free from clay for use on the road without any treatment other than is necessary to remove stones greater than one inch and a half in diameter.

A great many townships buy gravel by the load. This is very much like buying water by the painful instead of digging a well. Gravel should be bought by the pit, or by the acre, and where plentiful should be available at all times for any farmer who wants to increase the value of his land by improving the road past it. The Municipal Act provides for the expropriation of land for the purpose of procuring gravel, where the owner refuses to sell, or demands an exorbitant price. Especial care should be taken by councils to see that, prior to the performance of road work, the pit is stripped and the gravel treated if necessary.

### Hauling and Treatment of Gravel.

Where sand and clay are in excess, these should be removed by screening, and the large stone and boulders should be broken. If there is a considerable proportion of the latter, a method which offers many advantages is to place a rock crusher with a rotary screen attachment in the pit, passing all the material through, thereby removing the earthy substances, and breaking the stones with one operation.

If the product is stored in elevated bins, the expense of shovelling into waggons is avoided. If the number of large stones is not great, it will be the cheaper plan to screen the gravel in the ordinary way; or, better, by a rotary screen propelled by steam, the large stones being broken by hand or used in the road foundation.

When being prepared for use on heavily travelled and important roads, it is specially necessary to remove the dirt from the gravel. For little-travelled roads it may be impossible to take the precaution to screen the gravel; and, perhaps, if the earthy matter is not in excess, screening may be omitted to advantage; it is necessary, however, to emphasize the point that this can be recommended for little travelled roads only. It is the stone, not the earthy material, which is needed on the roads. There is enough dirt always on the roads without paying for more. Nor should there be loose stones or boulders, as they work up and roll loosely under the feet of horses and wheels of vehicles.

When gravel is not screened, very much may be accomplished by care in selecting and taking it from the pit. In drawing gravel to the roads, it is frequently the case that teamsters wish to be in company with each other as much as possible. For this reason, when loading the gravel, while there may be room for only one wagon in the pit at the point where the best material is to be found, yet a dozen teamsters drive in and the wagons are filled with whatever stuff can be most easily obtained, whether gravel, sand, boulders or clay.

Another common cause of earthy matter and sod being mixed with the gravel is to be found in the practice of tunnelling under an overlying layer of soil, which gradually falls into the pit, is mixed with the metal, and is drawn with it to the road. This earth should be first stripped from the surface if it does not form too deep a stratum, or care should be taken as it falls to keep it from mixing with the gravel.



## BROKEN STONE ROADS.

Broken stone roads are not necessarily "macadam" roads. Broken stone was used on roads long before the time of Macadam, but it was used in the same manner as a good many townships and towns in Ontario are using it to-day, and with much the same result. The roads are bad, and will remain so until they are drained, crowned, and graded, and cared for in the manner directed by Macadam, and by those who have succeeded in improving upon the methods of Macadam.

Broken stone, when of a suitable quality and properly applied, is a more durable surfacing material for roads and streets than gravel. Owing to the greater cost, it is used by towns and villages, and by those townships which have not a supply of gravel. As ordinarily used in townships, broken stone gives less satisfaction than gravel, because the latter binds quickly under traffic owing to the presence of sand and clay. To get the best service from broken stone a road roller should be used to consolidate it; otherwise the stones will roll loosely for a considerable length of time. The feeling of councils with regard to its use is that it makes a passable road for a short time in fall and spring, but that a good dirt road for summer use is spoiled. Townships which have only broken stone for road metal, will receive decided benefit from the use of a steam or horse road roller, which will at once consolidate the stone, and make a thoroughly good and smooth road for all seasons of the year.

### Quality or Stone

The different kinds of stones for macadam roads cannot be completely approached from the standpoint of names. Granite, limestone, sandstone, are rocks common in this Province, but to say that granite is better than limestone, or that limestone is better than sandstone, while true of the best qualities of each, may be quite incorrect as regards particular varieties, since a good sandstone may be preferable to a poor limestone or granite. The best stone for a macadam road is that which is hard and tough, not easily affected by the atmosphere, moisture, or the varying conditions of climate. The choice will generally lie between a cheaper and less durable stone near at hand, and a more costly but better stone from a distance.

A great proportion of the macadam roads in Ontario will be constructed of limestone, since this rock is the most common, quarries being within easy

access of almost any part of the Province. In quality it ranges from that which is useless to that which is almost equal to trap. Limestone, if it is tough and close-grained, is an excellent material for roads on which the weight of traffic is not excessive. Some dolomitic limestones, while hard, appear to lack in toughness. Other limestones of a slatey texture, have not good wearing qualities, are rapidly disintegrated on exposure to the atmosphere, and should be avoided. Some limestones of an open, porous nature, yield readily in this climate to the effects of moisture and frost, merely turning into mud. The excellent binding qualities of limestone make up largely for a lack of hardness, a weak cement being formed by the dust, which adds very much to its durability.

All things considered, hardness and toughness to resist wear and atmospheric action, the relative desirability of rocks is ordinarily in the following order: 1, trap; 2, syenite; 3, granite; 4, schist; 5, gneiss; 6, limestone; 7, quartzite; 8, sandstone; 9, slate; 10, mica schist; 11, marble. Of these, the last four, sandstone, slate, mica schist and marble, are of little value in road-making except for the lower courses, when they are surfaced with a durable stone that will resist wear.

### Testing Stone

In determining the best quality of stone for road purposes, there are four prominent destructive agencies which have to be considered: 1, the crushing of loads; 2, the grinding action of the wheels; 3, the blows from the shoes of horses; 4, climatic influences of air, water and frost.

With respect to the first three, a stone may have great hardness and splendid crushing strength, but at the same time be brittle, yielding readily to the grinding effect of wheels, and the blows administered by the hoofs of horses. On the other hand, a stone may be able to resist in a measure the second two wearing agencies, those of "abrasion" and "impact," and yet be so soft as to crush readily.

The fourth agency, the decomposing effect of the atmosphere, is one of very great importance. The denser stones, those which absorb the least water, are usually best able to resist the injurious action of frost and moisture. The weight, or specific gravity of a stone, is an indication of durability in this respect, the lighter stones usually being those which are most porous, and in consequence are subject to atmospheric decay.

Another feature which a good rock for roadmaking should possess is that, when crushed, it will break into a compact form. A stone that, in breaking, takes thin, flaky shapes, will not wear so long as one that breaks into cubical pieces, nor will it consolidate so readily in a roadbed, for a wheel, in passing over the side of a flat stone, will throw it out of place and loosen the stones adjoining.

The tests usually applied in determining the qualities of stone are those which indicate crushing strength; the power to resist impact and abrasion; the density, determined by the weight of the stone; the amount of water absorbed. While elaborate trials may be made, a practical man can judge of the qualities of a stone by applying simple tests; by breaking the stone with a hammer; wearing it on a grindstone; crushing it in a blacksmith's vice; scratching with an iron nail; breaking small pieces with the fingers. By such simple means, a general idea of the stone can readily be formed, but no test is so conclusive as actual wear on the road.

### Field Boulders

Broken stone produced from boulders has been objected to as road metal on various grounds. The rounded sides do not permit consolidation with the minimum of vacuum. If they have been exposed to the atmosphere the boulders are apt to be decomposed, are soft and will crumble readily. The mixture of different kinds of rock on the road surface, some hard, some soft, permits unequal wear, and produces a rough surface.

While these are defects which certainly are not to be overlooked in the choice of a road metal, boulders nevertheless, constitute a very valuable material for the construction of a road, particularly in localities where they are plentiful and gravel or bed rock not readily obtainable.

In selecting field boulders, care should be taken to discard all rock which shows signs of having "weathered," or having been decomposed by the action of the atmosphere. Sandstones and granites are peculiarly subject to this disintegration, while soft limestones are very common. Rocks which should be condemned from this cause are those which crumble readily under successive blows of a hammer, or which show iron stains when broken. A little experience will quickly teach a judicious roadman to detect the stone which is unfit for road purposes.

### Freighting Stone

Railway companies have shown a desire to assist in the building of roads, especially those leading the traffic to their own lines, and in some instances have delivered the material free, in others not charging more than half freight rates. When they are permitted to carry the material at slack seasons, they have expressed a willingness to do the work at actual cost of hauling, which would place some municipalities in a position to procure first-class material at even less cost than can others where material is considered plentiful. In this way, too, many towns and cities now using gravel of an inferior quality would be enabled to use a first-class quality of durable material.

### COMMON EARTH ROADS

Earth roads, having no surface covering of gravel or stone, but being merely a wagon track more or less graded and drained, are to be found in every township of the Province. Some townships (and the condition extends over a few counties), have not a local supply of gravel or stone and in consequence they have practically nothing but earth roads. There is now no township in the Province where this condition, in view of existing opportunities, need continue. The pioneers of this country, who toiled so strenuously to open and make earth roads through the forest, did not believe that their successors and descendants would rest content with so inferior a type of highway. If the people of to-day would put forth but half the effort made by the first settlers, the extent of earth road would very quickly, in all the older parts of the Province, reach more reasonable proportions. Gravel and broken stone can everywhere be procured cheaply by rail, and by taking proper precautions in construction and maintenance, a great deal of waste in using these materials can be overcome.

Where earth roads are suitable, it is to be said that for six months of the year they are often as good a driveway as could be desired for light travel. In order to extend the usefulness of an earth road the greatest care must be taken to see that drains and culverts are placed wherever needed, and that they are always in good working order. It should be well crowned, or rounded up, so as to shed the water freely to the side ditches; but in making this crown, sod and vegetable mould should be carefully excluded. A great deal of

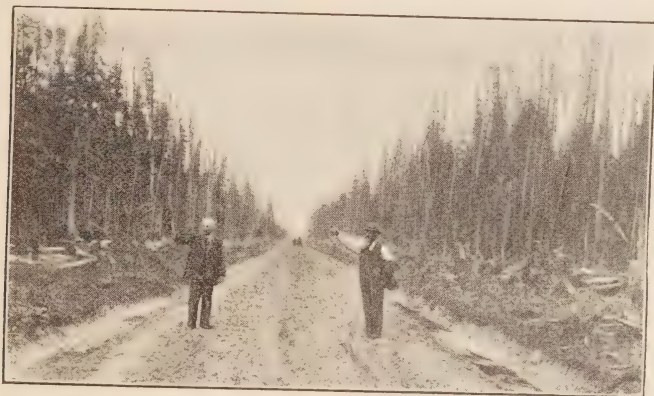
injury is done to this kind of road by running a grading machine along the edges, bringing loose stones and sod to the centre. This material should be thrown outwards and across the open drain. Under-drains should be used judiciously; while a complete system may not be used, tile drains should at least be placed where the water does not leave the side of the road early in the spring, or wherever the ground appears to be continually damp. If open drains are kept in good working order, and if the road is properly crowned, its condition in fall and spring will indicate the points at which tile drainage is most needed.

Earth roads can be materially improved for summer travel, by passing a grader or planer lightly over them early in the spring, before the ground has become hard and baked by the sun. It is much more satisfactory to make

materials do not wear down so rapidly as the earth around them, with the result that they become bumps or ridges, and the effect is to make two holes where there was originally only one.

Nearly all roads in Ontario have at one time been "dirt" roads. By a process of evolution some have become gravel or broken stone roads. A dirt road nicely crowned and well drained will make an excellent foundation on which to place a layer of gravel. A driveway which has passed through an apprenticeship as an earth road, and has, during that time, had due attention given to its drainage requirements, will have indicated the points at which open drains, culverts, and underdrains are most needed. With these provided, gravel can be applied to the best advantage.

Townships which feel compelled for the present to use earth roads only,



A Colonization Road in New Ontario.

a road good by the use of machinery than to wear it down by travel. If a grader is not available for this work, a second-hand railroad rail, one weighing from 50 to 70 pounds per yard, can be dragged by a team of horses up one side of the road and down the other with excellent effect; one round trip is usually sufficient. A steel I-beam is equally as good. The object of this treatment is to smooth down the ridges and fill the ruts and hollows. The blade of the grader, or the rail, should be kept nearly square across the road so as to carry a sufficient amount of earth before it to fill depressions. It is most important that this work should be done while the ground is slightly moist.

It is not advisable to repair holes in an earth road by filling them with gravel or broken stone. The latter ma-

because of the absence of a local supply of gravel or stone, should not think that the more primitive means of making these roads, and the old-time systems of road management are still suitable for them. If this class of road is to be maintained, there is all the more reason that they should be kept in good repair, and that the most efficient and economical system of doing this be adopted. To this end, road management should be placed in the hands of from one to four commissioners, who should have charge of all road machinery, and who should send the graders and planers over the roads as often as necessary to keep them smooth, to keep the ruts and wheel tracks filled up, and holes from forming. If pathmasters are retained, they should be required to act only in opening up snow roads, statute labor being devoted to



this purpose; if not required, it might be allowed to lapse for the year. For ordinary road maintenance, and the care of the earth roads, a special rate should be levied with the regular taxes, to be expended by the council and the road commissioners. In all respects, the model system of road management being adopted in numerous townships, is fully as well adapted to common earth roads as to the more permanent gravel and stone roads.

## SWAMP ROADS

Roads passing through swamps are often found difficult and expensive to construct and maintain. This arises from the fact that the soil is usually a decayed vegetable mould, always soft and mucky when wet—a condition maintained by the lack of drainage. The chief difference between a swamp road, however, and one on high land, is the matter of drainage—a complete proof, if other evidence were lacking, that the most necessary rule to be observed in making good roads is to provide good drainage.

In making a road through a swamp, every opportunity should be taken to carry the water away from the roadside. If this can be perfectly done, it will cease to be a swampy road, in spite of any difference in the quality of the soil. It is too often supposed that, by throwing up a sufficiently high grade, and piling on a great quantity of gravel, a permanent road must result. This may succeed in some instances, but conditions are rare in which it does so, unless, at the same time, good drainage is provided. Pending the time when sufficient drainage can be had, the best that can be done is to lay a corduroy foundation, on this place a covering of earth, and a surface coat of gravel or broken stone. Rather than use the black vegetable mould, which becomes mucky when wet, it is advisable to cover the corduroy with clay loam, a gravelly loam, sand or clay. Sand, when slightly moist, makes a good foundation. If the case is one in which the road passes over an extremely boggy ground, a good bottom can sometimes be made by throwing in a thick matting of willows and other shrubs and branches, on which to place the covering of earth, then gravel or stone.

## HILLS

Road allowances in Ontario very largely follow concession and lot lines, without regard to the suitability of these lines for the location of roads. As a result, by unnecessarily crossing swamps, hills, and rivers at unsuitable places for bridges, the expense of making and maintaining the roads is much greater than it otherwise might be. What is of equal consequence, the roads, in spite of the added expense, are not so well adapted to traffic as they would be if laid out with regard to hills and other topographical features. As a rule, the most perfectly located roads in the Province are found among those known as "trespass" roads. They follow Indian trails and the paths first made by the early settlers. They are usually on high land, with a firm soil, avoiding swamps and going around steep hills. The general condition of the older part of Ontario is flat and rolling, so that road location with respect to hills is not so important as in a more mountainous country. In Northern Ontario, where the land is more broken, road location is a matter of more general necessity.

The farmer prefers to have all his fields of rectangular shape, as they can be cultivated more easily than when outlined by circular or irregular lines. There is a disadvantage, too, in having an estate cut into separate sections by diverted highways. These are obstacles to the proper alignment of roads in long settled and populous districts, but present little difficulty in new portions of the Province. However, it is usually very much more in the interest of a property owner that the roads leading to his farm should be good and easily maintained, than that his farm should be in a compact block, with the roads to it impassable during a portion of the year, and even then expensive to build.

It is desirable that a road between two points should be as direct and short as possible. But a road is not necessarily shorter because it follows absolutely one pointing of the compass. The line followed by a vehicle, leading up the hills and down into the valleys, may be no shorter, nor, perhaps, as short, as a diverging route, following comparatively level ground; just as the distance from one end of the diameter of a sphere to the other is the same whether measured vertically or horizontally around the sphere.

Not only may nothing be gained in point of directness by following the line of the original survey, but there is to be considered the greater horse power required to move loads up and down

the hills, demanding, too, a greater expenditure of time. The steepest and largest hill governs the size of the load that can be hauled over the road.

Directness should frequently be sacrificed to obtain an easy grade, and to avoid expensive construction over bad ground, cuttings, fills, bridges and excessive grades.

Roads should not be absolutely flat in any direction. A certain longitudinal slope, at least six inches in 100 feet, is requisite to carry the water out of the drains and wheel tracks. A desirable grade will not exceed a rise of two or three feet in 100, as at that slope, which is the "angle of repose" for wagons on macadam roads, a horse can trot down without danger or injury. Hills should not, on much travelled roads, exceed a rise of eight feet in 100, or about one in twelve. When greater than that, they are a hindrance to traffic and to the free use of the road.

The expense of building a highway is materially increased by steep grades. A moderate divergence of numerous highways in the Province would do away with many expensive and unsatisfactory cuts and fills, and with a large number of bridges. The unsuitability of the soil also, if low-lying, swamp, or composed of vegetable matter, may render advisable a change of location in favor of a course which will offer a firmer and more easily drained subsoil.

Councils are authorized to alter the location of roads by the Municipal Act, in a manner fair to all parties; and it is advisable that this power be judiciously used whenever circumstances render it practicable. Opposition will no doubt be offered in some cases by the individual property owner affected, but councils representing the general public have a responsibility resting upon them which should not be overlooked in a matter so important.

Each hill should be brought to its permanent grade, as far as possible, at one time. If reduced a small amount year after year, the grading is apt to be destroyed in a large measure by rushes of water each ensuing wet season. The roadway being annually filled or cut settles slowly, and is apt to become almost impassable in fall and spring. Hills should be taken up for improvement consecutively, the worst or most necessary first, and they can then be permanently gravelled or metalled with broken stone.

The cost of keeping hills in repair is frequently much increased by rushes of storm water, occasioned by the practice of carrying water long distances in open drains, and finally pouring it over the hill by the roadside. If the hill is

steep, and a cut has been made, the water is not, and very often at the time of spring floods and freshets, cannot be kept in the open drain, and so is allowed to make a channel of its own down the centre of the road. This condition is the common result of not disposing of water in small quantities along natural watercourses. No water should as a rule be allowed to pass over the hills by the roadside, except that which naturally falls on the surface of the slope. Provision should be made for the disposal of water in the drains back of the hill, by carrying it through private property, under the authority of the Drainage Act, if necessary. Property owners, however, should understand the wisdom of permitting drains to be constructed across their lands when the benefit to be derived is not only better roads, but better drainage of their own fields.

The crown of a road on a hill should be slightly higher than is needed on level ground, a rise of at least one inch to the foot from side to centre being advisable for gravel roads. The crown must be sufficient to draw the water to the side gutters, and to do so, it must be sufficient to overcome the tendency of the water to flow directly down the hill, following the line of the wheel tracks. If the water commences to take the latter course, the wheel tracks are quickly deepened to ruts, stones are loosened or protrude, and the road becomes roughened and channeled.

Underground currents of water often find outlets on the hillsides. If any of these springy places occur under the roadbed, it is necessary to tap them at a good depth below the surface with tile drains. In such cases, tile drains will be needed under the open drains at the sides of the road, and the blind drains may then be carried diagonally across the road into the side underdrains. The open drains will sometimes need to be protected with cobble stones, if the hill is long or subject to damaging rushes of water.

Roads passing along the sides of hills are frequently softened and injured by the soakage water from high lands. This water should be intercepted before it passes under the road, by a drain along the side of the roadway next the hill. Tile should be used, if possible, instead of a deep open drain, and the trench filled with gravel, stone or other porous material to more readily intercept and absorb the soakage water.

The protection of the sides of cuttings and embankments should be skillfully attended to. It is very common to see these washed away in places

after a heavy rain, or after the spring thaw; the sides of the cuttings settle into and fill the open drains, and the water is forced into the road; the sides of embankments wash away, leaving dangerous holes in the road. The tendency is to make cuttings and embankments too steep, with a desire to do the least possible amount of earth work.

The stability of earth slopes is endangered by the action of air and moisture, especially by alternate frost and thaw, and depends upon the care with which water is drained away. A certain amount of moisture increases the strength of the slopes, but too much acts like a lubricant, and reduces the earth to a semi-fluid condition. Clay retains water and becomes pasty. Sand, if in a basin of water-holding earth, becomes a quicksand and is completely unstable. A mixture of sand and clay, the former favoring the access of water, and the latter preventing its escape, is at times the most difficult case to deal with. There is a certain "angle of repose," at which the tendency of earth to slip is overcome. This angle varies with different kinds of earth, under various conditions of moisture. Wet clay is troublesome, and an angle of sixteen degrees is sometimes needed to secure it. Well drained clay, however, will rest at an angle of forty-five degrees, or a slope of one to one. With average gravel and compact earth, a slope of one to one is a safe angle, although first-class gravel will retain an almost vertical face for a considerable time. Sand varies greatly, "water sand" being better than wet clay. Dry sand usually needs a slope of one and one-half to one. Rules of this description cannot be laid down with complete accuracy, but serve to indicate what is to be expected with different soils. The qualities of soils are so variable that it is advisable to learn by observation what slope is needed for a particular piece of earthwork.

The natural form of an earth slope when in permanent repose is a concave curve, with the flattest portion near the bottom. There is a careless tendency to leave the slope rather in the opposite form, with an outward curve. Convex, or straight, slopes will invariably slip until the natural form is obtained, and in cuttings and embankments approaching ten feet in height, care given to a proper construction in this regard is always profitable.

A dry stone wall at the foot of an embankment or cutting will protect the drain from slipping earth. A coating of sod is one of the best protectors of the slope, and a few inches of vegetable mould over the surface, with a

liberal sowing of grass seed, is a measure sometimes adopted.

## REPAIR OF ROADS

Cheap roads are not those which have cost least for first construction, but those which cost least after a term of years. True economy in regard to roads requires that they should be kept in repair. Roads, after being properly built, should never get out of repair. They become so only by neglect. A smooth road, one with an even surface, will last much longer than will a road that is rough. Everyone has observed the hollows and pitch-holes formed on both sides of a wooden culvert or bridge projecting above the surface of the road. These pitch-holes form because every vehicle crossing the bridge drops down with a heavy jolt. Shallow at first, the deeper the holes become the more rapidly they increase in size and depth, because the pounding action of the wheels increases with the depth. Water collects and remains in these holes, and assists the wearing action of the wheels. The same process of wear is going on at many places in the road, other than at bridges and culverts. Wherever there is a roughness of any kind, a projecting or loose stone, a soft or hollow spot in the road, there is the same pounding action of the wheels, assisted by the collecting of pools of water, which lie in every depression. In the spring of the year, on roads which have been drifted, and on which the snow lies unevenly, the shallow places melt first, leaving the gravel or stone road exposed in spots, with mounds of snow on each side. Here the same action goes on. Wheels drop into the depressions kept soft by the melting snow. Pitch-holes commence, and a few days of traffic breaks up the road, and does a great amount of injury.

Roads should receive constant attention. This is the most economical and satisfactory system of making repairs. Repairs should be made, not once a year, nor twice, but as soon as signs of wear appear. Special attention is needed in early spring and early fall, as at these two periods much can be done to prepare the roads for the ensuing seasons of particularly severe conditions.

Ruts should not be allowed to form in a gravel or stone road when once properly constructed, but the material should be kept in place by a constant use of the rake. This is especially necessary if gravel or stone is placed loosely on the road and left for traffic to consolidate. Settlements and hol-



lows should not be allowed to hold water and create pitch-holes for want of a load of metal. Drains should not be allowed to become obstructed, thereby saturating and softening the whole roadbed. Culverts should not stand full of water to be burst by the expanding ice because of neglected outlets. An almost inexhaustible list of these everyday occurrences could be mentioned, which in themselves apparently trifling, become in the aggregate of very great importance. Roadmaking is made up of details none of which can be overlooked, except at a loss.

The overseer should give immediate attention to all emergency work rendered necessary by washouts, etc., either by personal or hired labor. He should be able to send a man over the roads as often as necessary to repair the effect of ordinary wear. Better still, a man should be employed to devote his whole time to a certain mileage of roads, to make repairs as they become necessary.

ly wasted, being mixed with the mud from beneath. When this occurs a comparatively great expenditure is needed to make the road as good as before.

## THE GRADING MACHINE

Road graders are one of the most important and useful of modern inventions. They have effected a great saving in the work of making and repairing country roads, and have reduced the cost to a considerable degree.

A few years ago the most pretentious roadmaking implement in any of the township municipalities was the drag scraper. The most widely used of the more modern implements is now the road grader, and this has almost revolutionized the cost of preliminary earthwork, while it is exceedingly useful in the repair of old roads. The majority



Where scraping is needed in the early spring.

Every farmer, too, should appreciate the value of good roads sufficiently to voluntarily devote time to the roads passing his property, rather than to permit them to become bad or impassable because of neglect.

Where a council, as is commonly the case, provides materials, gravel, tile, etc., for road maintenance, out of the general funds, one man with horse and cart, and help when required, can keep in repair ten miles of gravel or stone road, at a cost not exceeding the statute labor along the road commuted at one dollar a day.

It is one of the great advantages of the new system of road management being adopted by townships and counties, that men can be employed to work on the roads whenever and wherever needed. Neglect to keep the surface of a road smooth and in repair permits it to break up badly in the spring and fall, and the gravel or stone is large-

of townships have only one, quite a number have two, while others have three and even four. With about three hundred in all throughout the Province, the outlay for graders, at an average cost of \$250 each, represents a total investment of \$75,000.

Road graders are now so commonly used in the construction and repair of roads, and their utility is so generally recognized, that it is scarcely necessary to urge their adoption. They are modern, labor-saving implements, which do their work better and more cheaply than can be done by hand, and that nearly 300 townships of Ontario have purchased them is forcible evidence of their value. It is not their use which it now seems necessary to urge, but rather there is need of guarding against their misuse.

Councils have too often rested content with merely buying a grader, satisfied that in so doing they have done

their whole duty. Unfortunately, the grading machine is not possessed of intelligence; it does not know when or how a road should be graded. So that, unless a method is established, and unless a capable man is engaged to operate it, the grader is likely to give but little service.

### Roads Have Been Ruined

Road graders are of much use in the repair of old gravel and stone roads, in restoring the crown, but, unfortunately, it is no exaggeration to say that miles of roads have been ruined by misuse of graders in this work. Old roads are commonly flat, sometimes concave, with square shoulders at the side. In repairing these shoulders there may be a small amount of stone which has been crowded out by the wheels of vehicles, and which it is safe to draw again to the centre of the road. On no account should the square shoulders at the side be drawn to the centre of the road. These shoulders are composed of earth and sod, and if placed on top of the old gravel or stone foundation will merely turn to slush in wet weather and utterly ruin the road. The only way to repair such roads is to cut off these shoulders, throwing them away from the road across the open ditch, if necessary, and then to restore the crown by placing a coat of new gravel in the centre of the road. This earth removed from the roadway may be used in filling an adjacent ravine, the approach to a bridge or culvert, for leveling the sides of the road allowance or in numerous other ways that local conditions will suggest; and it can often be handled most conveniently by means of a wheeled scraper.

### Use When the Ground is Moist

For the proper management of a grader, arrangements should be made every spring to have the grader ready and in use as soon as the ground is sufficiently dry. The soil is then in its best condition for manipulation, having been mellowed by frost; the roads are rough and most in need of treatment. Roads which are properly graded early in the spring are at once compacted by traffic, and they will remain in their best condition all summer. If the work is left until late in the season, clay soils become baked and hardened, difficult to handle, and rough when finished. Sandy soils if loosened up late in the year will be much more dusty than if treated early in the spring, when they are damp and readily compacted by traffic.

### Plan the Season's Work

The township road commissioners, councillors or a committee of the council (according to the local system of road management) should go over the roads early in the year and determine what grading is required.

This work should be staked out according to the definite width and dimensions of roads as required by township regulations. The grader, when it commences in the spring, should proceed to each piece of work consecutively, and should be in use continuously until all the grading is done for that year.

At the present time it is customary for the grading machines to go here and there over the township without method—one day on one side of the township, next day on the opposite side, then to another distant part, backward and forward, wasting a considerable part of the wages of men and teams in moving from one part of the township to another. By following a well-considered schedule the cost of moving the machine between the different pieces of work is reduced to a minimum.

Some distinction should be made between the grading of new roads and repair of old roads. Where the roads are being metalled from year to year with gravel or broken stone, it is not, as a rule, advisable to grade a greater length of road than can be gravelled or macadamized the same year.

### An Active, Energetic Operator

One of the first essentials in providing that the roads will be properly graded is to select the right man to operate the grader. He should be active and energetic, with some mechanical experience; one who will take an interest in his work, who will make a study of roadmaking and who will be willing to follow the instructions given him by the township road commissioner or councillor having supervision of the work.

### Employ a Permanent Operator

When such a man is found he should be engaged from year to year so that his growing experience will render him more efficient. There are many townships which do not employ a regular operator, but instead allow the grading machine to be handled by anyone and every one. In some cases it is even passed around in the performance of statute labor from beat to beat. Managed in so careless a manner, a grading machine will be a source of disappointment only.

## Use the Horses for the Season

The same horses should be used in operating the grader for an entire season, at least. "Green" horses are very awkward, will not pull together, waste much time, and even a reliable man as operator cannot, under such circumstances, perform good work. It is a great waste in many ways to attempt to use a grading machine with horses provided, as is sometimes done, as a part of statute labor. Horses used continuously become accustomed to the work, to each other, to the driver, and will produce much better results.

## Traction Engine in Place of Horses

Some townships, instead of horses, use a traction engine. Where one can be rented from a local thresher, it can usually be obtained very cheaply in the early part of the year. Where a considerable stretch has to be graded without turning, as in cutting off the shoulders of old gravel roads, a traction engine is much preferable to horses. It is more steady, and does not stop to rest.

## Plan of Road

The township regulations as to the width and dimensions of road should be closely followed in grading. These generally provide for a width of twenty-four feet between the inside edges of the open drains on roads of greatest travel, twenty feet on roads of moderate travel, and eighteen feet on roads of least travel. A rise of from half an inch to one inch to the foot, from the inside edge of the drain to the centre of the road, is ample crown for a new road, after the gravel or stone has been placed on it. More than this is unnecessary, and an injury. There is a tendency in the use of graders to crown roads excessively, and this should be guarded against.

## Extent of New Road to be Graded.

Where gravel or stone is regularly used for surfacing roads, only such an extent of new road should be graded as can be metalled and otherwise completed in the one summer. If this is not done, the work of grading has practically to be done over in many cases before gravel can be applied, as the road will be so much cut by traffic and washed out by rains and freshets of the ensuing wet seasons. In addition, the road is left in a very soft condition, readily turning into a deep slough

of mud. The ideal method for making a good road for traffic, and for conserving the road metal, is to roll down and consolidate the grade as left by the grader. On this should be placed a layer of broken stone, and this in turn rolled down for traffic.

## Cuts and Fills

Wheeled scrapers are a valuable aid to roadmaking when dealing with earthwork, particularly in cutting down hills and using the earth to fill low places.

They afford the most economical means yet invented of moving earth short distances, and these, with road graders and the well-known drag scrapers, are the chief implements for dealing with earthwork on country roads. By their use, the grading of roads can be reduced to less than two-thirds the cost where shovel, pick and wagon are required. Wheeled scrapers are especially useful where the earth has not to be moved a distance exceeding 200 feet. They are useful for making open ditches, but require that there should be no shoulders on the road, but only easy slopes, and that the bottom of the ditches shall be about two feet in width. The cost is \$40 or \$50 each.

## THE ROAD ROLLER

A number of townships in Ontario report the use of horse road rollers in constructing their roads. Counties having county road systems either have steam rollers or are about to purchase them. Numerous towns and cities of which a list is given use this, the most valuable of modern roadmaking implements.

For economical, durable and serviceable roadmaking, a heavy roller is indispensable. A road should be sufficiently smooth and compact to shed the water readily to the side gutters. If the gravel or other road metal is dropped from the wagon loosely on a soft earth foundation, water passes into the subsoil as through a sieve. Wheels passing over the road when in such a condition at once sink into and rut not only the gravel, but the earth beneath. Water is held in the ruts, and each succeeding vehicle renders their condition worse. The road is less durable, since the gravel, being mixed with the earth from beneath it, contains, when finally consolidated, a dusty, easily-worn surface.

The consolidation of loosely spread stone or gravel by traffic is a slow process, causing much inconvenience to



travel, during which the earth of the subsoil becomes mixed with the stone. Earth intermixed with stone prevents the strong mechanical bond which clean metal will assume when the stones are wedged one against the other by a roller. The particles of earth, when wet, have a lubricating influence on the stone, and, under the action of wheels the surface is more readily broken up. By the use of a roller the earth subsoil should be first thoroughly consolidated. The stone should be placed on this foundation in layers, and each layer well compacted. In this way a smooth, durable, waterproof coating of stone, free from earthy material can be laid over a firm foundation. A road should be made for traffic, not by it. To leave loose gravel and stone in the roadway is neither an agreeable method of constructing a

An impediment to the use of heavy rollers in a good many townships is the insufficient strength of bridges and culverts; and while valid in some instances, the objection is liable to exaggeration in others. Weak wooden bridges and culverts could in many cases be temporarily strengthened sufficiently; while in others, they could be entirely avoided by first completing the rolling on one side and then passing around a block or so to commence work on the other.

There are different classes of rollers. The horse rollers weighing six or eight tons will do fairly well if a steam roller cannot be afforded, but the horse roller is not sufficiently heavy for the best results. It has to be used much longer than the steam roller. The feet of the horses, in exerting sufficient strength to move the roller, sink into



road, nor will it produce the most durable road.

Among the benefits to be derived from the use of a roller on country roads are:

(1) A good road is at once made for vehicles.

(2) A dirt track is not made near the ditch, to avoid a pile of loose stone or gravel, so that the side of the road is not cut up in such a way as to interfere with surface drainage.

(3) Traffic is not inconvenienced in the fall by being forced to drive through loose gravel or crushed stone.

(4) The gravel or stone is not forced down into the subsoil by the wheels and feet of the horses, is not churned and mixed with the earth, and there is in this way a great saving in the amount of metal needed on the road.

(5) There is a great saving in manual labor, and repairs are more readily and effectively made.

and disturb the road metal, and injure the shape and quality of the roadway, while on hills it is at a disadvantage.

The steam rollers are of various weights, ranging from eight to twenty tons. Rollers of fifteen tons weight are those generally used by the towns and cities of Ontario. The cost of horse rollers is usually about \$90 per ton, or from \$400 to \$600 each. Horse rollers are, however, generally so constructed that the weight may be increased by iron castings; so that a roller of five tons may be made to weigh about eight. Steam rollers cost about \$3,000. For operation, a horse roller, with two teams, will cost \$6 per day. A steam roller will cost \$10 a day, including interest and depreciation, but will do several times the amount of work done by a horse roller, so that the saving in operation is considerable.

The amount of rolling which can be done in a day varies according to the

quality of metal used, the kind and amount of binder, the thickness of the layer of stone rolled, and the weight and type of roller. With broken limestone, rolled by a twelve-ton steam roller, the amount of stone compacted will average between forty and fifty cubic yards in a day of ten hours.

The objection to the purchase of steam rollers by townships is their cost. It is, however, but a matter of time when this will be overcome. The price may or may not be reduced, but in the meantime an appreciation of good roads will grow, the value of good roads will be more realized, rural population, wealth, and traffic must increase, so that all influences will tend toward the gradual use of steam rollers by townships. Counties, towns and cities are finding that they must use them.

#### STEAM ROAD ROLLERS IN ONTARIO.

Municipality.	Year purchased.	Weight (tons.)	Cost.
			\$
Belleville .....	1898	15	3,000
Berlin .....	1898	15	3,100
Brantford .....	1901	15	3,200
Brockville .....	1894	17	4,000
Carleton Place ..	1901	10	3,000
Chatham .....	1898	12	3,135
Cornwall .....	1898	16	3,000
Galt .....	1896	15	2,700
Guelph .....	1902	15	3,250
Hamilton .....	1898	15	3,300
	1900	16	3,250
Ingersoll .....	1898	12	2,900
Kingston .....	1884	18	.....
Lindsay .....	1903	15	3,250
London .....	1895	15	3,000
Niagara Falls ..	1897	12	3,650
Niagara Falls			
Park Com'sion	1903	7	2,300
Ottawa .....	1885	15	3,000
Owen Sound ..	1898	15	3,000
Pembroke .....	1902	15	3,250
Peterborough ..	1899	15	2,800
Renfrew .....	1899	15	875
St. Catharines ..	1897	12	3,600
St. Thomas .....	(1900?)	12	.....
Smith's Falls ..	1900	17	3,100
Stratford .....	1897	15	3,800
Toronto .....	1895	15	3,050
	1900	10	2,373
Welland .....	1903	..	3,000
Windsor .....	1898	12	2,800
Woodstock .....	1897	10	3,300

broken stone is scarcely to be considered, in Canada, as a material for roadmaking. In occasional instances prisoners at the county gaol take exercise at a stone-heap, or old men who would otherwise have to be cared for by charity are allowed to earn a little money by breaking stone for a municipal corporation; but the quantity of stone prepared in this way is very limited. By means of the stone crusher, the difficulty of higher wages, and scarcity of labor is largely overcome, and broken stone, for roadmaking, is being placed within the reach of all. The work is done cheaply and quickly, and while more expensive than gravel, a much more durable road can be constructed. Even in the treatment of gravel, a crusher is often very valuable especially if it contains many large stones and boulders.

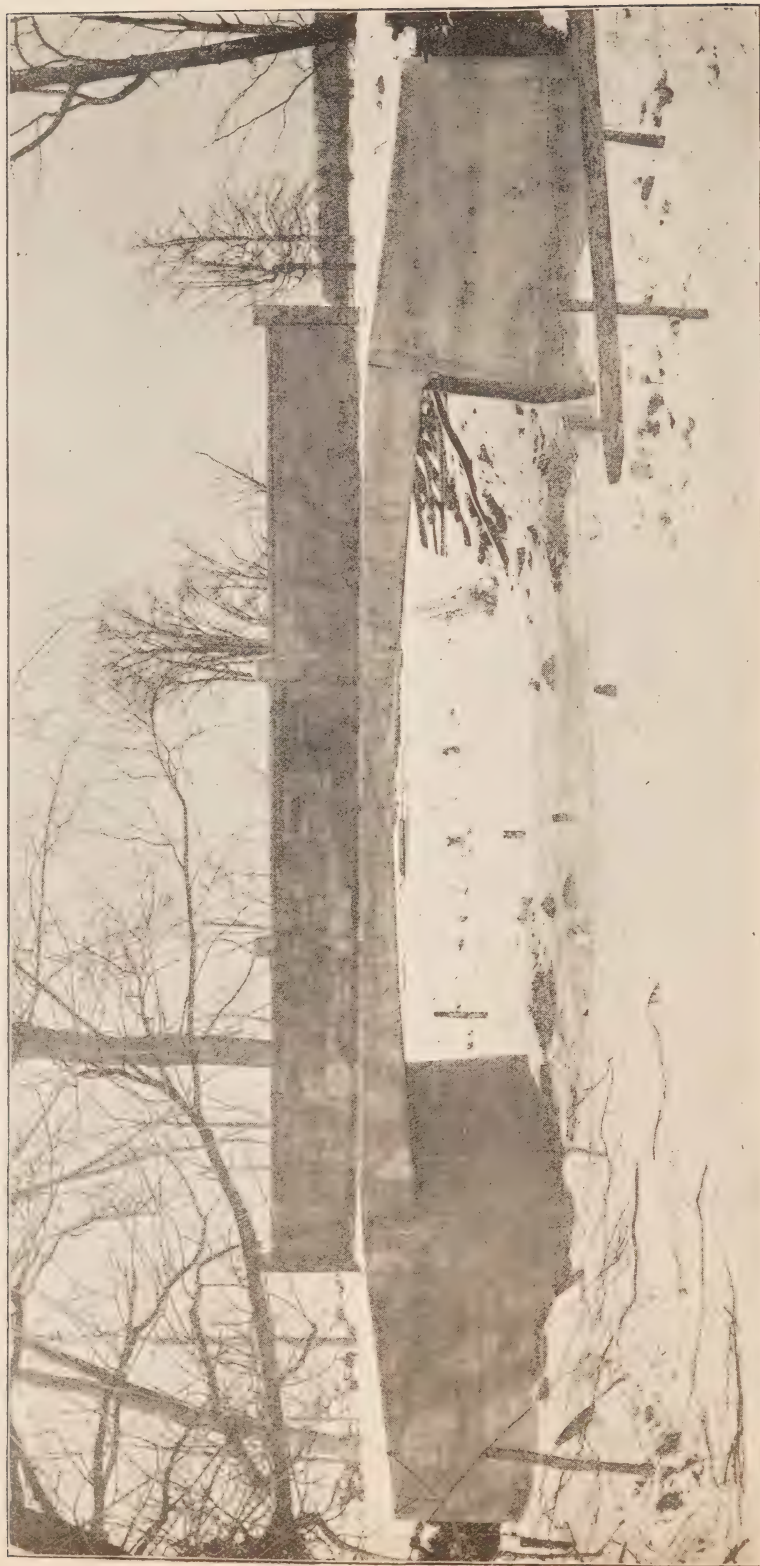
These machines are made after various patterns, the main division being into rotary and jaw crushers. Some of the smaller sizes are set on wheels, and may be moved readily from place to place. Others are for stationary work, in a quarry, or at a point to which stone, field boulders, etc., are brought to be broken. They are operated by steam power, a traction engine or stationary engine, or by an electric motor, as circumstances render most advantageous. Some municipalities owning a steam roller obtain power from it, but this is apt to injure the roller.

Where field boulders are plentiful, the property owners are very glad, as a rule, to have a means of disposing of them, especially when they can be hauled in winter time. If the stone is stored for future crushing it should be put in piles on both sides of where the crusher is to be set up. Much can be saved by setting up a crusher so that it can be fed directly from the wagons, instead of wheeling the stones to barrows. To permit of this, in Brantford, the crusher is permanently set in an excavation on a side-hill at the river, wagons driving over the crusher; while in Berlin a platform is erected to the level of the crusher. The broken stone should always be received into bins from the crusher, and from these a wagon containing a quarter of a cord can be loaded in from two to four minutes.

One of the most valuable features of a crusher is that by attaching it to a rotary screen the crushed stone may be separated into grades according to size, usually such as will pass through a three-inch ring, such as will through a one and one-half-inch ring, and fine chips and screenings. By placing the coarse stone in the bottom of the road, and the finest on top, a smoother and

#### \* THE STONE CRUSHER

Stone for roadmaking is now rarely broken by hand. With existing high wages and scarcity of labor, hand-



Concrete bridge between Downie and S. Easthope. Span, 30 feet ; width, 14 feet ; cost, \$635.



more double road is obtained. An average cost of a crusher is \$800 or \$900.

They are principally used in the eastern part of the Province, where good stone is plentiful and gravel is scarce. In some cases an engine is purchased, and in others the engine is rented from some one in the vicinity owning a threshing machine. A traction engine is an exceedingly valuable part of a roadmaking outfit, as it can be used for operating the crusher, if portable, for moving it from place to place, and for operating a grading machine. Crushers are owned by numerous towns and cities in all parts of the Province. Townships owning them are: West Hawkesbury, Hallowell, Collingwood, St. Vincent, Markham, Ameliasburg, Winchester, Thessalon (town and township), Smith, Cornwall, Nottawasaga, Drummond, North Grimsby and Derby. Crushers are owned by private parties, and used for municipal purposes in Ernestown, Rear Yonge and Escott, Front Leeds and Lansdowne, Beckwith, Pittsburg, Elizabethtown, and Kitley. There are also well-known quarries at Amherstburg, Hagersville and other places on the Grand River, on the Niagara River, in the vicinity of Hamilton, at St. Mary's, Kingston, Brockville, Ottawa and other points. The counties of Victoria and Peel have each purchased a crusher, which is supplied to the minor municipalities as they require it, while Hastings, Wentworth, Simcoe, Wellington and Lanark use them for their county roads.

## PRACTICAL ROADAKING IN OUTLINE

The following rules are among the most important in making and maintaining township roads of the class most suited to this Province. They should be applied judiciously, not overlooking the fact that there may be an exception to every rule. The most efficient application of these rules can in many cases only result when the roadmaker has a wider understanding of the facts upon which they are based, and which are discussed in greater detail elsewhere in this report.

1. Every good road has two essential features:

(a) The earth subsoil is well drained, naturally or artificially, making a strong, unyielding foundation, acted upon to the least possible degree by frost.

(b) The wearing surface is a smooth, hard and compact crust, which sheds water readily, and distributes the concentrated wheel load over a greater area of subsoil.

2. The surface covering is generally a coating of gravel or broken stone, which should be put on the road in such a way that it will not, in wet weather, be churned up and mixed with the earth beneath. That is, it should form a distinct coating.

3. To accomplish this:

(a) The gravel or broken stone should contain very little sand or clay—it should be clean.

(b) The roads should be crowned or rounded in the centre so as to shed the water to the open drain.

(c) Ruts should not be allowed to form, as they prevent water from passing to the open drains.

(d) The open drains should have a sufficient fall and free outlet, so that the water will not stand in them, but will be carried away immediately.

(e) Tile underdrains should be laid wherever the open drains are not sufficient, and where the ground has a moist or wet appearance, with a tendency to absorb the gravel and run readily. By this means the foundation is made dry.

4. Do not leave the gravel or stone just as it drops from the wagon, but level it so that travel will at once pass over and consolidate it before the fall rains commence.

5. Roll the gravel or stone with a road roller until it is smooth and hard. If a roller cannot be had keep the new road metal raked or scraped into the wheel and horse tracks until consolidated.

6. Grade and crown the earth road before putting on gravel or stone, also roll the earth road before putting on the metal if a road roller is available.

7. The grader should start work early in the spring, and be kept continuously in operation until the season's work is completed. Work for the grading machine should be staked out in advance, so that the several pieces can be taken up consecutively; otherwise much time is lost in moving the machine from one part of the township to another.

8. A sufficient crown for new gravel roads on level ground is one inch of rise to each foot of width from side to centre.

9. The road on hills should have a greater crown than on level ground, otherwise the water will follow the wheel tracks and create deep ruts, instead of passing to the side drains. One and one-quarter inches to the foot from the side to centre will be sufficient.

10. The work of cutting down hills should be undertaken systematically, a few being taken up each year and made good, the worst or most necessary

being first looked after. Gravel or stone can then be put on permanently. The steepness should not exceed one foot in twelve.

11. Repair old gravel roads which have a hard centre, but too little crown, and which have high, square shoulders, by cutting off the shoulders, turning the material outward across the ditch if necessary, and placing new gravel or stone in the centre of the road. Do not cover the old gravel foundation with the mixture of earth, sod and fine gravel, of which the shoulders are composed. The shoulders can most easily be cut off by means of a grading machine.

12. Roads of importance should be about twenty-four feet in width, between the inside edges of the open ditches, with the central eight feet gravelled or metalled with broken stone. Roads of least travel should not be less than eighteen feet in width.

13. Wherever water stands on the roadway or by the roadside, or wherever the ground remains soft, or is swampy in the spring and fall, better drainage is needed.

14. Look over the roads after heavy rains and during spring freshets. The work of a few minutes in freeing drains from obstructions, or diverting a current of water into a proper channel, may become the work of days if neglected.

15. Surface water should be disposed of in small quantities; great accumulations are hard to handle and are destructive. Obtain outlets into natural watercourses as often as possible.

16. Instead of having deep, open ditches to underdrain the road, and dry the foundation, use tile.

17. Give culverts a good fall and free outlet, so that water will not freeze in them.

18. In taking gravel from the pit, see that precautions are taken to draw only clean material. Do not let the face of the pit be scraped down, mixing clay, sand and turf with good gravel.

19. Gravel which retains a perpendicular face in the pit in spring, and shows no trace of slipping, is generally fit for use on the road without treatment. Dirty gravel should be screened.

20. Plan and lay out the work before getting the men on the ground.

21. When preparing plans keep the work of succeeding years in view.

22. Have on the work only such number of men and teams as can be properly directed.

23. In laying out the work, estimate on a full day's work from each man, and see that it is performed. Specify the number of loads of gravel to con-

stitute a day's work. Every wagon box should hold a quarter of a cord.

24. Make early arrangements for having on the road, when required, and in good repair, all implements and tools that will be needed.

25. Do all work with a view to permanence and durability.

## CONCRETE CULVERTS

Water should be carried from the road allowance as quickly as possible, for it is an excess of water that is the great destroyer of roads. To do this, it must be led away in small quantities, along natural watercourses, and must be conducted under the roadway at more or less frequent intervals, according to the topography of the district. Small wooden culverts are constantly decaying, requiring removal and repair, are a matter of constant expense, and an obstruction to travel and the free use of the road.

The construction and repair of culverts has become, in numerous townships, a serious drain upon the yearly appropriation available for road purposes. In some cases as much as half or two-thirds of the grant from the general funds is absorbed in this way, a matter of from \$1,000 to \$2,000 annually. The number of these culverts on country roads varies greatly. Ordinarily half a dozen are needed for each mile of road if proper drainage is provided.

### Tile Culverts

A number of townships in the Province have done much towards greater permanency and efficiency, and a reduction of cost in this regard by using concrete tile, and vitrified sewer pipe in place of cedar, or other timber. These materials have been used in a few municipalities for from fifteen to eighteen years, and in some instances the annual outlay for culverts has been almost wiped out, owing to their permanency and durability.

The manufacture of concrete tile for culverts is a very simple matter, and can be undertaken by the municipalities themselves, although in numerous cases they are now manufactured as a private enterprise. Just such a number of pipe as are actually required for the season's work need to be manufactured; the implements required are inexpensive, and the pipe may be made by the municipality for actual cost, which, after a little experience, can be reduced to a very small amount.

The implements required are of the simplest kind. The most important are two steel spring-cylinders, one to set

inside the other, leaving a space between the two equal to the thickness of the finished concrete pipe. These can be procured from the manufacturers of roadmaking machinery. By "spring cylinder" it may be explained, is meant such a cylinder as would be formed by rolling a steel plate into a tube without sealing the joint. With the smaller of these cylinders the edges overlap or coil slightly, but are so manufactured that the edges may be forced back and set into a perfect cylinder. With the larger, the edges do not quite



Concrete Tile Culvert.

meet, but may be forced together and fastened. Accompanying these molds are bottom and top rings, which shape the bell and spigot ends of the pipe.

The two cylinders, with joints flush, are set on end, the one centrally inside the other, and on the bottom "ring," which in turn rests on a firm board bottom. The concrete, made of first-class cement, and clean, screened gravel, in the proportion of one of cement to three of gravel, is then tamped firmly into the space or mold between the two cylinders. The tamping-iron used to press the concrete into place is so shaped as to fit closely to the cylinder.

The concrete is allowed to stand in the mold for a short time, when the cylinders are removed; the outer and larger cylinder by removing the clamps, and allowing the edges to spring apart; the inner cylinder by removing the fastenings, so as to allow the edges to again overlap, returning to the shape of a coil. The outlet cylinder having thus been made larger, and the

inner one smaller, they can be readily taken away, and the concrete pipe is then left until thoroughly hardened. For the larger sizes, the two halves of the outer cylinder are usually hinged, and can be more carefully removed than when allowed to "spring" from the concrete.

The concrete adheres closely to the metal, and to overcome this it is necessary to keep the molds well oiled. This should be done after each tile is made, and when the molds are by this means kept perfectly clean, a smooth and uniform pipe of good appearance will be obtained. A good mixture for oiling the molds is composed of two parts of machine oil to one part of coal oil.

To secure a durable pipe it is necessary to exercise much care in mixing the concrete. Portland cement should be used. If gravel is used, it should first of all be clean. Any earthy material, clay, or vegetable mold, will create a flaw in the pipe, which will lead to its early destruction, and durability is the quality most to be desired. The gravel should be of a size that will pass through a one-half inch screen, and should be of varying sized grain, in such proportions as to make a compact mixture. The gravel forms the greater part of the mass of concrete, and it is evident that the results will depend very largely on the quality of the gravel.

The materials should be mixed in the proportion of one part of Portland cement to two parts of gravel. They should first be turned over in a dry state until thoroughly intermixed and of a uniform color. Water should then be added. This, like the gravel, should be clean, and there should be just enough to moisten the mass of concrete, making it of the consistency of a stiff mortar. An excess of water tends to injure concrete in various ways, and is especially to be avoided in the manufacture of tile, as the tamping cannot be properly performed when too much water is used. When the water has been added, the mixture should be made uniformly moist, by turning it over three times with a shovel. The concrete is then ready to be placed in the molds, in which it should be firmly and vigorously tamped.

Such a quantity of concrete should be mixed as can be put in the molds before the process of setting has commenced, and it is therefore of importance to know how long the brand of cement used can be worked before setting begins. A moderately slow setting Portland cement is necessary for this work. Ordinarily it is best to mix enough to fill one mold at a time.



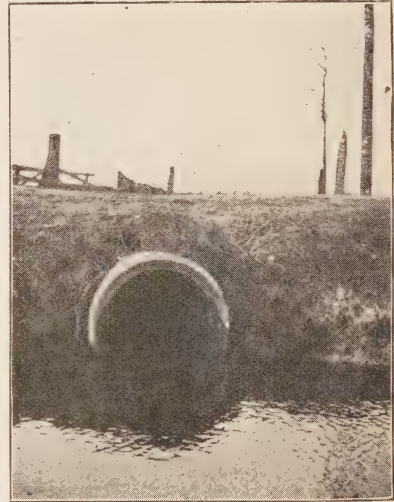
Remnants of concrete which have commenced to set should be thrown away, and under no circumstances should they be worked up again and used, as they are certain to cause a defective pipe. Defects which do not appear until after the tile have been placed in a culvert and covered with earth, cause not merely the loss of the pipe, but a considerable outlay for labor is wasted as well. The concrete should be handled quickly. Two men are needed, one to shovel it into the molds, and the other to tamp it. From twelve to fifteen feet of pipe, of ten to twelve inches diameter, is an average day's work for two men. The cost of manufacturing pipe of these diameters will vary with the price of labor and materials, from fifteen to twenty-five cents per lineal foot.

Until the concrete has hardened sufficiently the molds should not be disturbed. When the pipe has attained sufficient strength (which it should do in from five to seven hours, according to the temperature of the atmosphere, and the kind of cement used), it can be turned end for end, thereby taking it off the bottom rings, and the molds may be removed. To enable the pipe to set satisfactorily they should be dampened every day for several days, if the weather is dry, and then should be protected from the direct rays of the sun in hot weather. They should not be used for some time after being made, but should be allowed to season for from four to six weeks.

The molds for manufacturing these tile may be obtained in various sizes, the more common being for tile ranging from ten to thirty inches in diameter. The ten-inch tile is made about one and three-quarter inches thick; the twelve-inch tile, about two inches thick; the fifteen inch tile, two and one-eighth inches thick; the eighteen-inch tile, two and one-quarter inches thick; the twenty-four-inch tile, two and one-half inches thick; and the thirty-inch tile, three and one-half inches thick. Molds for making twelve-inch pipe cost about \$12 per set; for fifteen inch, about \$14 per set; for eighteen inch, about \$17 per set; for twenty-four inch, about \$21.50 per set; and for thirty inch, about \$26. The molds are such as will manufacture pipe two and one-half feet long. One set of bottom rings—those for forming the bell of the pipe—go with each set of molds, but it is advisable to have about three sets of bottom rings for each pair of cylinders, to permit the maximum number of pipe to be made in a day.

If the best results are to be obtained from the use of concrete tile

culverts, the tile must be put in place with reasonable care. It is, in the first place, necessary that they shall be laid with a good fall on a regular grade to a free outlet, in such a way that water will not stand in them. Lay the tile with the spigot end down grade, and make the joints tight with cement mortar. If the joints are open, water will work along the outside of the culvert, and finally make a considerable chan-



Concrete Tile Culvert.

nel, which will allow the culvert to get out of line and finally result in a "cave-in." To prevent the water finding its way along the outside of the pipe, it is advisable to protect the ends with concrete, stone or brick head-walls.

Excavate a concave bed for the pipe, with depressions for the bell of the pipe to rest in, thus securing an even bearing, without which a heavy load passing over before the culvert has properly settled into place may burst the tile. Tile cannot be used in very shallow culverts, but must have a sufficient depth of earth over them to protect them from the direct pressure of heavy loads. The depth of covering necessarily increases with the size of the pipe. At least a foot of earth over the top is advisable in every case; but for culverts of two feet in diameter or over, this should be increased to at least eighteen inches.

The earth should be well packed and rammed around the tile to secure a firm bearing, and light soils should not be used immediately over or around the culvert. A heavy clay, a firm gravel, or a compact sand will answer, but

vegetable mould, water sand and light loams are subject to washouts.

As to the outlet, the culvert should be set nearly flush with the surface of the ground. If set higher than the surface, the fall of water will wash out a depression, and in time will undermine the end of the culvert. A too rapid grade will have the same effect, and it is well to cobble-pave an outlet where this undermining action is likely to occur.

## ARCH CULVERTS

Concrete or other durable culvert tile are to be recommended for small waterways, where there can be no doubt as to their sufficiency to accommodate the maximum flow of water. A difficulty with tile, however, has been that they are frequently used in places where a larger waterway should be provided; and while they may be large enough for the greatest flow of water for a period of years, yet there is apt to come a time of sudden flood or freshet when they are subjected to a rush of water for which they have not capacity, and a washout results.

For this reason, when putting in culverts which it is desired shall be per-

be used for the smaller waterways. Concrete is made of gravel and Portland cement; or, of broken stone, sand and Portland cement. If properly made, concrete is not only cheaper, but is more durable than stone masonry.

The cost of a concrete culvert will range from about \$4.50 to \$6.50 per cubic yard of concrete in the structure. The variation is created by a number of details—the availability of gravel, the cost of Portland cement, the cost of labor and other items. The first to be constructed by a municipality always costs more than subsequent work.

A stone arch is so designed that the stone will remain in place without being held together by mortar. Concrete arches, on the other hand, are dependent upon the cohesive strength of the materials. Good workmanship and good materials are therefore of exceedingly great importance in building concrete arch culverts. It is also essential that the side walls of arch culverts shall rest on a firm stratum of hardpan, gravel, compact earth, or other unyielding base, so that there will be the least possible settlement. If settlement occurs to any extent it is rarely uniform, and the arch is thereby dis-



Stone Arch, Wentworth County.

manent, care should be taken to provide a waterway of ample size for the unusual, not the usual, amount of flow. To this end, arch culverts of concrete or stone masonry should be employed, or concrete culverts with a flat top may

torted and cracked. Usually it is necessary to excavate, for the side walls, a depth of about three feet below the bed of the stream. A certain depth is necessary in any location in order that the side walls may not only be safe

from settlement, but also from the undermining tendency of the stream.

## FLAT TOP CULVERT

A concrete culvert with a flat top can be adapted to any location where stone masonry walls with a flag-stone top could be used and is a parallel case, in which artificial stone or concrete is used in place of natural stone.

In this type of culvert the principal matter to guard against would be a break in the cover stone. There is no difficulty, for short spans up to at least six feet, in proportioning the thickness of this cover for any possible load to which the culvert would be subjected. A possible cause of failure would arise from the displacement of the side walls by frost, which might break the cover stone; or by uneven settlement from any cause.

Care should in every case be taken to see that the side walls are carried to a sufficient depth to a secure foundation; three feet is sufficient for most situations, especially where a layer of hard pan, firm gravel, or rock, is close to the surface. The greater the span, the more necessity there is for a deep or a solid foundation.

The strength for the cover stone, especially for culverts of greater span, say six or eight feet, would be much increased by having barbed or smooth fence wire stretched back and forth across the culvert, which should be fully imbedded in concrete, but as close as possible to the bottom of the cover-stone.

It is desirable that a layer of earth, six inches or more in depth, should be over the top of the culvert. If this is impossible, and the top of the culvert must be level with the road surface, the cover stone should have a finishing coat rich in cement, in the proportions of one part of cement to two of sand. Otherwise a culvert of this description may be made throughout of Portland cement and gravel, mixed in the proportions of one of cement to six parts to gravel. Wing and parapet walls may be built as the situation of the culvert requires.

## HIGHWAY BRIDGES

The use of concrete does not cease with tile and small span arch culverts, but may extend to arches of considerable span, while for abutments and piers it is the most satisfactory material available.

Concrete bridges have been commonly built with spans of thirty and forty feet. Last year an arch of thirty feet span and fourteen-foot roadway was

erected on the town line between the Townships of Downie and South East-hope at a cost of \$635. The thickness of the floor is only fourteen inches, and the abutments at each end are three and a half feet thick at the base and two and a half feet at the top. This bridge, of which a photo engraving appears elsewhere in this report, is almost wholly of concrete, but the flooring is reinforced to some extent with metal. The method of construction was to first construct a wooden substructure between the abutments. On this was placed four inches of concrete, in which were imbedded steel rods of one and three-quarters inches diameter, running lengthways, and ten inches apart. On this a coating of concrete was laid, then a layer of woven wire was stretched from end to end of the bridge. On this a coating of concrete was laid, then another layer of wire, and so on, making a total thickness of fourteen inches at the centre of the bridge. A concrete parapet wall takes the place of a railing. This is also strengthened with wire, and heavy bolts are run downward and fastened in the floor so that the wall adds to the strength of the bridge.

Highway bridges of longer span are now being commonly constructed with steel superstructures, and concrete or stone masonry abutments. When timber of the best quality was more plentiful and cheaper than now, wooden bridges were no doubt most economical, but with the growing scarcity of lumber, increased price, and poorer quality obtainable, the more durable if more expensive materials, will after a term of years, be found the cheapest.

Wooden bridges supported on piles do not last for more than eight or ten years, during which period a considerable amount has to be spent for repairs. Concrete piers and abutments, if well built, should last a century or more, while the steel superstructure, with proper attention, should last at least half as long. So that, although the initial cost of a wooden bridge may be only one half or one third that of a steel and concrete structure, the latter will in the end be the cheapest. In addition, it will be safer, less liable to collapse, and will be more convenient for traffic.

Well-made concrete is cheaper and fully as durable as stone masonry. Just as the cost of stone masonry varies in different localities, in accordance with the cost of stone, labor, etc., so the cost of concrete will vary according to the relative cost of gravel, broken stone, Portland cement, and labor. For piers and abutments, the cost of concrete usually ranges from \$4 to \$6 per



cubic yard, as compared with stone masonry at from \$10 to \$14 per cubic yard. Under almost any circumstances concrete is cheaper than stone masonry.

### Bridge Floors

Bridge floors of plank usually wear out in from two to four years, and are a constant matter of expense. Where bridges are built with masonry abutments and steel superstructure, the floors should be made of concrete. An illustration is given in this report of a bridge in Elgin, with a floor of this description—the type of construction now being generally adopted throughout that county, and elsewhere in the Province.

Concrete floors are exceedingly durable, and, although costing much more than plank when first laid, their greater durability will enable them to outwear half a dozen plank floors. Their cost in Elgin when first adopted was 47 cents a square foot, but this has been reduced, and floors are now being laid for 28 cents a square foot.

Concrete adds a considerable load to the dead weight of the bridge, but this is more than compensated for by the extent to which it distributes the live load. With a plank floor, the weight of every vehicle passing over it is transmitted to the individual members of the bridge, causing a constant jarring and distortion that is very destructive to steel. With concrete, on the other hand, the weight of a passing vehicle is spread over a much greater area of the bridge structure, the floor being a monolith and distributing the live load over a much greater bearing than can each plank. In this way the injury to bridges is much less with a concrete than with a plank floor.

So much is this the case that, with a concrete floor, it is not necessary to restrict the speed of vehicles traveling over it. With a plank floor it is always expected that horses will not be driven over the bridge faster than a walk. But with concrete floors, travel is not interfered with, and horses may be driven over at the ordinary pace.



## ACT FOR THE IMPROVEMENT OF PUBLIC HIGHWAYS.

The Act for the Improvement of Public Highways, I Edward VII., Chap. 32, which received the assent of the Legislature April 15th, 1901, with certain subsequent amendments is as follows :

His Majesty, by and with the advice and consent of the Legislative Assembly of the Province of Ontario, enacts as follows :

The sum of \$1,000,000 is hereby set apart to be paid out of the Consolidated Revenue Fund of the Province to aid in the improvement of public highways, subject to the terms and conditions hereinafter set forth.

The highways to be improved in any county may, before the 1st day of January, 1905, be designated by by-law of the county council, and a copy of such by-law shall be transmitted forthwith to the clerks of the townships of such county.

The municipal councils of the townships shall within three months of the receipt of such notice from the clerk of the county council take into consideration the highways so designated in said by-law, and shall report their acceptance or rejection of the same to the clerk of the county council.

On the receipt of such reports by the clerk of the county council from the clerks of the township councils in the county, if it should appear that one-third of the township councils are adverse to the highways designated by the county council as county highways, then the roads within such townships as reported adversely, which are to form part of the county highway system of such township, shall be determined by arbitration as provided in the Municipal Act.

Where it appears that more than one-third of the township councils disapprove of the system of highways designated in the by-law submitted by the county council, the county council shall then submit to the ratepayers of the county qualified to vote on money by-laws the question, "Are you in favor of a county road system?" If a majority of the votes cast is in favor of a county road system, the roads to be designated and assumed within any township, the council of which disapproved of the roads designated by the county council, shall be determined by arbitration as provided in the Municipal Act.

Before the final passing of a by-law by a county council designating and assuming roads as provided in sub-sections (1), (2) and (3) of the preceding section, the county council may submit the same for the approval of a majority of the ratepayers of the county qualified to vote on money by-laws.

In case the by-law or question so submitted fails to receive the assent of a majority of the ratepayers of the whole county so voting or the county council neglects to take action as provided in section 2, then the council of any local municipality in the county may, on or before the 1st of January, 1906, pass a by-law designating the roads within such local municipality to be improved, but no by-law for the improvement of roads in any municipality shall take effect until such by-law is approved by a majority of the ratepayers of such municipality in the manner provided by the Municipal Act with respect to by-laws for the creation of debts.

Any municipality may apply the whole or part of the moneys to which it may be entitled under the this Act towards paying any expenses that may be incurred for the purchase of toll roads within such municipality, or for freeing the same from tolls. Such toll roads as are purchased shall be included in the roads to be designated and assumed or improved in accordance with the provision of this Act.

Any highway, in order to come under the provisions of this Act as to aid, shall be constructed or repaired according to the regulations of the Public Works Department with respect to highways.

On the completion of any work of road improvement under this Act the council of the municipality under which such work was carried on shall submit to the Public Works Department a statement setting forth the cost of such work, such statement to be certified by a competent engineer, who shall further certify that the regulations of the Public Works Department have been complied with, and on the receipt of said statement by the Provincial Treasurer, certified and approved by the proper officer of the Public Works Department, the municipality shall be entitled to receive out of the moneys hereby set apart for public highways an amount equal to one-third of the cost of the work, but not to exceed the proportion of the appropriation to which such municipality is entitled.

\$1,000,000 appropriated for road improvements.

Townships to report acceptance or rejection of by-law.

By-law designating highways to be improved.

Arbitration where one-third of the townships are adverse.

Rev. Stat. c. 225.

Submitting question to ratepayers.

Submitting by-law for assuming roads.

When local municipalities may adopt road scheme.

Application of grant to purchase of toll roads.

Regulation and inspection.

Grant of one-third of cost of improvement.

The municipal council of any township or county taking advantage of this Act may raise by debentures, payable in thirty years, as provided by the Municipal Act, such sums of money as may be necessary to meet any expenditure on highways under this Act, but in no case shall the debentures issued under this Act exceed two per cent. of the equalized assessment of the county.

Issuing debentures for expenditure on highways.

The statute labor, for which all lands fronting on roads constructed or repaired under this Act may from year to year be liable, may be commuted and may be applied towards the improvement of the other highways of the municipality as may be determined by the township councils concerned.

Statute labor on improved roads to be commuted.

In the case of any township receiving grants from the consolidated revenues of the Province for colonization roads, the amount of such colonization grants shall be deducted from any sum of money to which such township is entitled under this Act.

Amount of colonization road grant to be deducted.

Where any township has been in receipt of grants for colonization roads out of the consolidated revenue fund, for the five years previous to the date of this Act, the assessed area of such township shall be deducted from the area of the county in which such township is situated, in determining the sum to which the county is entitled under this Act.

Grants made before passing of Act to be deducted.

No county shall be entitled to receive any portion of the sum set apart by the Act for the Improvement of Public Highways passed in the first year of His Majesty's reign as aforesaid unless and until the by-law designating public highways within the county as a county system of highways has been approved of by the Lieutenant-Governor in Council.

By-law for county road system to be approved by Lieutenant Governor in Council.

Where it appears that the highways designated as county roads established under this Act do not pass through one or more of the townships in the county or where it appears that such highways pass through but a small portion of any township, the county council may by by-law make a grant of a specific amount or an annual sum or both for the permanent improvement of highways in such townships or townships as an equivalent for the amount which such township or townships may contribute for the establishment of a county system of highways.

Annual county grant for roads to township<sup>3</sup> not immediately interested in county system.

Where at the time of the passing of the said Act the municipal council of any county had by by-law established a system of county roads equal in every respect to the requirements of the Public Works Department, such system of county roads shall be deemed to be within the meaning and intent of the said Act without any submission thereof to the ratepayers or to the township councils, as provided in sections 3 and 4 of the said Act, but nothing in this section contained shall be deemed as preventing the county council from granting an equivalent to any township not benefited by the said county road system, as provided by section 5 of this Act.

Aid to county where road system established prior to 1 Edw. VII, c. 32.

The county council of any county may make a grant by by-law to any incorporated village or town in the county not separated from the county for the purpose of improving certain highways to be designated in such by-law in such village or town, but such highways shall not form a part of the county system of highways.

County grant to roads in villages and towns.

Wherever a county road intersects a highway which is not a county road the continuation of the county road to its full width across the road so intersected, including the bridges and culverts thereon or touching thereon, shall be a part of the county road system.

Intersection of other highways by county roads.

A county council shall not be liable for the building, maintenance or repair of sidewalks on any county road or portion thereof.

County Council not liable for sidewalks on county roads.

The county council shall in respect to county roads have all the powers given to townships, cities, towns, and incorporated villages under the Act respecting Snow Fences.

Counties to have powers as to snow fences. Rev. Stat. c. 250.



## ROAD EXPENDITURE IN TOWNSHIPS.

The following schedule shows the cash expenditure by township councils for the thirteen years, 1889-1901; the statute labor for ten years; and the estimated road mileage in each township. This does not include the expenditure by county councils, nor by cities, towns and villages. Township ratepayers will be able to make some interesting deductions as to what bad roads are costing. These statistics are compiled from reports of township officials to the Bureau of Industries.

## ESSEX.

Name of township.	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	Total.	Statute Labor in 10 years previous to 1896.	Estimated Road Mileage.
Anderton	1,374	1,236	1,848	3,527	2,048	1,434	631	2,187	2,285	2,549	2,228	1,736	1,019	24,072	\$	69
Colchester, North	2,284	2,674	2,438	1,551	1,035	1,345	354	1,913	1,118	2,888	2,288	2,064	1,638	24,275	21,510	88
Colchester, South	3,645	4,457	1,910	1,532	2,030	2,028	2,239	1,269	1,067	2,256	1,498	2,572	1,678	23,381	21,590	95
Gosheld, North	575	981	817	639	625	1,251	664	683	2,388	1,271	987	716	1,707	21,303	37,280	70
Gosheld, South	1,119	2,011	1,862	2,122	1,804	1,492	1,028	1,542	2,388	2,065	2,181	1,664	2,466	23,383	12,800	70
Maldstone	1,123	1,277	1,885	1,676	1,796	3,599	2,223	2,190	2,559	2,361	2,104	2,408	2,360	27,275	25,390	150
Malden	2,479	2,863	2,394	2,839	3,434	2,322	1,688	1,181	1,995	2,361	2,122	2,134	2,632	36,281	33,700	65
Mereau	2,659	3,226	1,955	1,786	3,317	2,059	1,898	2,786	2,756	2,355	4,398	3,588	3,038	36,281	33,700	120
Peter Island	783	3,347	1,095	1,963	2,485	1,280	1,023	384	246	461	914	931	1,078	36,281	10,870	50
Rochester, East	2,921	2,821	1,881	2,215	1,460	943	479	1,524	698	1,751	1,627	1,164	1,172	20,229	17,440	86
Sandwich, South	3,901	1,279	2,812	1,872	813	1,546	931	1,527	1,631	1,070	808	1,383	1,019	20,756	18,000	54
Sandwich, West	1,167	1,755	1,482	761	2,195	1,789	499	1,799	1,973	2,332	2,462	3,485	2,915	30,117	21,920	69
Tilbury, North					1,641	2,106	1,583	2,334	323	3,675	1,899	3,881	2,715	15,078	16,440	100
Tilbury, West								1,434	1,879	1,073	1,157	1,268	1,508	18,479	13,800	60
Totals														328,452	259,990	1,198

## KENT.

Camden	1,174	1,585	1,900	1,986	1,751	1,892	1,002	1,312	1,147	7,372	2,179	3,024	1,289	28,213	26,630	120
Chatham	1,639	2,724	3,494	2,436	3,207	2,026	1,415	2,518	4,092	3,924	4,017	3,433	3,036	38,411	39,000	240
Dover	946	1,175	1,353	1,073	900	736	640	735	949	1,508	905	638	571	12,787	26,180	300
Harwich	3,148	3,422	3,422	3,037	5,816	3,612	3,563	3,425	5,223	4,290	4,471	4,417	3,766	54,501	51,620	198
Howard	3,848	2,772	2,966	3,401	3,195	3,168	1,908	2,173	3,277	3,039	2,701	3,126	4,969	40,616	23,770	160
Orford	2,748	2,485	1,723	1,914	1,758	2,322	2,676	1,839	2,178	2,239	2,180	2,584	2,487	29,166	27,840	210
Raleigh	1,894	3,991	2,281	2,043	2,281	1,997	1,363	1,438	1,924	2,042	2,338	2,185	1,883	27,601	41,710	57
Romney	1,637	3,461	608	2,044	473	564	1,261	690	1,021	2,120	1,640	1,222	1,709	14,021	16,600	180
Tilbury, East	2,466	1,974	2,744	2,706	1,764	2,785	1,716	2,843	1,021	4,387	2,370	2,365	2,472	36,011	19,380	72
Zone	300	471	878	1,495	1,558	603	707	765	664	4,763	2,305	799	718	11,226	11,640	
Totals														292,553	284,380	1,681

ELGIN.

Albionborough	5,369	3,729	3,248	4,717	4,065	4,760	4,057	3,745	4,156	4,211	5,568	5,256	4,022	56,903	45,110	225
Bayham	3,379	3,254	5,201	3,073	3,042	6,719	4,732	3,953	2,897	4,152	3,551	4,054	3,885	50,132	35,270	165
Dorchester, South	2,570	1,738	3,410	3,410	3,117	1,151	1,891	1,281	2,035	2,038	2,307	1,860	2,668	30,141	18,870	90
Dunwich	5,306	5,313	3,279	5,825	3,729	5,231	4,578	3,700	6,936	5,123	4,766	6,024	5,480	67,100	10,140	204
Malahide	2,879	3,125	4,019	6,485	4,706	4,706	3,125	4,260	4,052	4,206	7,749	7,207	6,088	60,490	48,250	158
Southwold	2,787	4,376	5,059	6,110	5,887	5,495	3,715	3,931	5,928	4,975	5,480	6,288	6,866	68,845	44,920	216
Yarmouth	5,740	6,539	6,111	7,397	6,691	8,922	6,200	7,371	7,028	5,889	9,531	12,369	7,548	98,195	53,240	180
Totals														431,812	255,800	1,238

## NORFOLK.

Charlottesville	911	692	629	1,115	961	810	698	958	1,235	1,201	1,690	2,457	660	14,017	30,080	174
Broughton	1,027	957	1,119	862	1,079	724	598	892	1,219	1,801	1,035	824	1,378	12,567	16,230	99
Middleton	2,583	2,036	2,337	2,863	2,602	1,740	1,397	2,342	2,304	1,961	2,826	1,849	2,127	29,057	31,510	111
Townsend	1,344	1,165	2,250	2,134	1,101	1,311	1,016	1,460	1,049	2,886	2,342	1,586	1,166	23,711	45,420	230
Walsingham, North	1,011	1,478	1,382	1,982	1,349	1,213	1,980	1,778	1,714	2,727	1,711	2,429	1,499	22,720	22,650	95
Walsingham, South	475	968	962	1,457	1,000	1,088	1,272	1,301	1,237	2,211	1,212	1,175	1,114	15,467	24,130	78
Widham	2,297	1,495	1,041	3,363	1,787	1,399	816	2,658	1,333	836	1,225	1,174	2,353	21,174	29,740	300
Woodhouse	1,248	1,136	2,032	1,333	687	2,756	1,349	1,586	1,045	1,612	2,172	1,184	1,553	19,696	26,770	150
Totals														157,832	227,130	1,237

## HALLAMAND.

Canboro'	270	1,077	334	584	1,032	219	701	387	150	446	324	355	260	6,159	13,030	63
Cayuga, North	1,140	465	951	652	684	888	637	546	414	1,011	280	637	281	8,586	19,640	96
Cayuga, South	31	32	92	33	82	101	298	87	145	68	106	37	113	1,253	6,950	39
Dunham	283	166	174	451	194	264	263	221	132	149	136	229	166	2,848	9,010	40
Montfort	615	701	508	537	392	771	597	501	496	458	588	368	444	6,926	19,280	100
Oroville	1,264	1,030	884	807	626	706	1,302	2,858	2,047	2,720	881	2,458	601	18,193	18,290	96
Rainham	924	1,134	204	988	578	274	554	215	416	218	716	1,951	615	7,787	17,110	70
Somerset	633	1,369	718	584	988	924	1,052	966	1,142	657	1,312	1,142	1,206	12,725	20,120	160
Shelbroke	239	68	88	20	27	66	18	39	209	23	475	114	70	864	4,020	20
Walpole	2,701	2,058	1,992	2,540	1,438	2,804	1,678	1,586	2,299	3,501	4,395	3,396	2,400	32,748	69,230	198
Totals														98,087	196,680	882

## WELLAND.

Bertie	1,358	1,289	1,190	969	1,677	1,990	1,312	1,157	1,079	1,199	2,234	2,479	3,542	21,825	36,220	189
Crowland	273	322	286	240	407	685	726	321	382	376	594	652	613	5,858	17,490	57
Hamblestone	455	614	1,254	352	545	736	540	702	652	962	1,216	1,121	1,410	10,520	39,080	90
Pelham	501	518	761	737	847	922	755	880	1,165	1,078	1,000	2,725	2,253	14,325	31,380	151
Stamford	653	879	333	646	758	990	1,127	1,679	1,162	639	1,879	1,690	2,013	14,082	30,250	100
Thorold	380	324	334	315	878	686	702	705	751	333	670	787	1,066	8,028	25,110	66
Wainfleet	972	1,066	1,288	1,251	1,274	1,397	794	1,120	820	652	980	1,053	1,094	30,210	14,480	153
Willoughby	227	242	377	243	979	603	175	466	427	500	650	441	492	5,840	11,120	100
Totals														94,958	221,160	897

## ROAD EXPENDITURES IN TOWNSHIPS.—Continued.

## LAMBERTON.

Name of Township.	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	Total.	Statute Labor in 10 years previous to 1896.	Estimated Road Mileage.
Bosquet.....	3,677	3,013	3,075	4,007	4,527	4,686	2,991	3,044	2,925	3,099	3,654	2,931	2,686	\$ 41,526	\$ 32,740	210
Brooke.....	2,496	4,660	2,155	5,185	3,532	4,131	3,360	4,742	5,311	4,750	4,602	4,908	5,926	38,008	30,000	170
Dawn.....	2,404	2,062	2,407	2,176	1,790	2,311	2,233	1,861	2,069	1,721	3,018	2,511	3,392	21,000	21,000	235
Emiskillen.....	6,703	3,466	7,401	6,214	9,354	7,779	5,223	3,723	4,484	2,831	3,087	5,890	6,349	30,320	30,320	145
Euphemie.....	1,066	3,466	1,822	3,721	5,245	5,014	1,179	1,368	1,359	1,620	4,733	3,397	5,043	21,000	21,000	200
Moore.....	3,667	4,616	5,245	5,311	5,311	6,440	3,520	3,799	3,436	4,844	3,691	3,816	3,625	53,793	36,210	208
Plympton.....	3,607	4,100	4,415	5,330	5,698	4,101	4,881	3,670	4,457	3,845	3,691	3,576	3,625	22,530	22,530	108
Sarabua.....	3,559	1,811	2,450	1,930	2,272	3,304	1,370	3,965	2,097	1,534	2,712	1,593	1,977	30,574	30,574	221
Sombra.....	3,846	1,784	2,283	2,432	2,162	2,826	1,711	2,223	3,648	2,913	2,361	3,014	2,360	33,026	31,560	210
Warwick.....	4,080	4,175	5,034	4,335	10,827	5,206	2,890	3,647	3,645	3,246	4,346	3,442	3,526	38,205	31,560	210
Totals.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	476,975	319,790	1,906

## HURON.

Ashtield.....	2,327	2,149	3,631	2,888	4,038	4,338	2,185	2,216	2,806	2,742	3,334	3,969	3,256	40,169	33,880	189
Colborne.....	2,120	2,518	2,841	1,753	1,329	1,687	1,379	1,468	1,576	1,841	1,783	2,035	1,468	21,704	19,120	125
Godenich.....	2,312	2,154	2,779	2,570	3,131	3,198	1,860	1,919	2,491	2,418	2,893	2,418	2,019	32,794	22,270	136
Grey.....	2,373	2,386	2,433	3,188	3,153	3,026	1,346	2,357	1,797	2,601	2,097	2,531	2,367	30,816	11,540	200
Hay.....	2,209	1,882	1,881	2,506	2,896	3,325	2,117	2,051	3,288	2,934	2,650	3,019	2,335	38,365	37,810	110
Howick.....	1,872	1,882	1,891	1,614	2,571	1,888	1,365	1,849	1,581	2,051	2,183	2,566	3,104	26,030	40,230	201
Huilel.....	2,469	2,747	2,106	1,939	3,036	2,613	2,158	3,540	3,396	3,541	3,516	3,307	2,487	37,218	28,540	132
McKillop.....	2,401	1,773	2,416	1,752	3,556	2,298	3,177	2,062	2,444	2,436	4,489	4,286	2,533	51,338	33,360	132
Morris.....	1,280	1,865	1,799	1,952	1,945	2,470	1,536	1,361	2,611	1,518	1,709	1,496	2,096	25,896	23,900	132
Stanley.....	3,304	4,175	3,614	3,794	4,686	3,934	2,513	3,294	4,010	2,899	3,194	2,555	3,422	45,353	30,250	137
Stephen.....	3,564	1,577	1,764	1,735	2,108	2,467	1,128	656	438	589	1,999	1,425	3,922	28,893	25,310	127
Tricksmith.....	1,889	1,329	1,181	1,777	777	935	1,125	1,353	2,211	1,131	1,031	1,031	1,241	12,914	21,350	87
Turnberry.....	2,220	2,057	2,061	2,107	2,510	1,883	1,717	1,353	2,211	2,576	3,475	2,809	2,740	29,728	23,500	126
Tyborne.....	1,228	1,168	1,079	1,326	1,626	1,561	1,882	911	1,538	1,061	947	1,254	1,271	16,836	17,500	100
Wawanosh, East.....	1,646	1,372	1,646	1,806	1,075	1,448	1,206	1,743	1,226	1,469	1,604	1,430	1,579	20,058	18,570	100
Wawanosh, West.....	1,834	1,372	1,646	1,806	1,075	1,448	1,206	1,743	1,226	1,469	1,604	1,430	1,579	20,058	18,570	100
Totals.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	468,782	460,330	2,217

## BRUCE.

Albemarle.....	812	797	925	547	695	774	760	569	687	497	732	792	1,075	9,362	10,410	125
Amabel.....	1,872	1,586	2,235	2,226	2,149	1,561	1,064	1,589	1,000	1,148	2,084	1,646	1,329	19,051	12,500	142
Arrau.....	2,361	1,251	2,314	3,956	2,915	1,585	1,974	397	1,221	1,795	1,083	1,248	1,186	21,903	26,380	140
Brant.....	6,655	2,672	3,673	3,663	2,465	5,326	1,326	3,228	1,830	2,620	2,514	8,344	5,555	34,660	32,320	207
Bruce.....	2,082	1,968	2,773	2,575	2,881	2,884	2,365	1,946	2,135	1,185	3,886	4,304	3,607	36,017	32,320	169
Carnick.....	2,408	6,264	1,757	1,298	2,200	1,051	1,356	1,021	2,164	2,170	846	1,359	1,656	23,855	43,910	325
Culross.....	322	462	2,004	492	1,432	1,688	1,566	1,352	1,431	1,542	2,669	1,329	1,136	18,225	29,890	160
Eastpor.....	961	692	781	489	967	827	725	729	840	303	590	998	1,212	10,114	10,140	86



Elderslie .....	2,029	2,014	2,595	2,058	2,420	2,929	1,683	2,489	1,040	1,238	2,008	2,443	2,431	27,477	53,210	140
Greenock .....	1,835	1,650	2,902	2,058	2,693	2,026	1,378	1,647	1,485	2,484	2,103	2,432	3,792	24,008	32,750	120
Huron .....	3,912	2,905	5,513	3,204	4,347	4,626	3,370	3,500	3,988	2,583	3,291	5,490	3,345	5,386	31,010	155
Kinairdine .....	2,818	2,972	2,840	3,206	2,543	2,543	2,006	1,340	1,868	1,300	1,627	2,942	2,893	32,612	41,000	170
Killies .....	1,624	1,495	1,659	1,314	2,076	1,148	1,068	1,139	1,103	1,376	1,112	1,748	1,393	17,612	23,310	141
Lindsay and St. Edmonds .....	315	389	399	439	539	427	439	487	1,012	363	489	1,000	407	9,282	4,700	76
Saugen .....	1,022	819	1,955	1,828	2,646	1,161	943	663	1,241	806	802	1,576	779	16,301	18,530	106
Totals .....														370,169	412,860	2,261
GREY.																
Artemesia .....	539	1,995	3,067	2,267	2,627	2,387	2,544	2,162	2,471	2,483	2,365	3,083	3,010	31,000	30,000	201
Bentnack .....	1,310	1,693	2,673	2,016	1,891	2,806	1,781	1,376	1,657	2,325	2,776	2,957	2,687	27,948	40,000	225
Collingwood .....	2,978	3,055	4,127	2,640	4,157	4,155	2,529	2,250	3,583	3,576	3,284	3,245	2,723	42,302	30,000	130
Derby .....	1,567	1,803	1,850	1,895	2,427	1,908	1,800	1,663	1,655	1,742	1,951	2,342	1,510	23,763	21,880	82
Ekremont .....	453	411	449	587	593	1,507	1,459	450	1,261	825	1,922	476	1,998	12,451	39,930	150
Euphrasia .....	718	1,054	1,385	1,916	1,513	2,597	1,651	1,156	1,038	1,547	1,277	2,165	2,344	20,361	34,240	216
Glencl .....	1,033	2,017	1,089	1,544	1,624	1,648	1,436	449	1,104	1,242	1,843	2,439	2,028	19,530	32,700	150
Holland .....	1,213	1,172	1,212	1,172	1,244	1,248	741	1,333	892	828	871	859	962	12,547	37,600	204
Keppel .....	1,718	1,650	1,624	1,468	2,192	3,415	1,697	1,077	951	1,798	1,779	2,873	3,029	25,271	37,600	187
Normanby .....	3,027	2,373	3,580	4,314	3,448	4,608	1,997	3,504	2,269	3,745	2,823	2,229	3,467	39,384	34,100	240
Osprey .....	798	758	864	957	1,195	1,457	909	1,122	876	650	1,273	1,337	1,289	13,775	33,850	110
Proton .....	1,684	1,856	2,181	1,374	1,951	4,358	1,615	1,457	1,272	1,484	1,561	1,358	1,619	23,770	39,910	240
St. Vincent .....	2,302	1,523	1,817	2,246	1,806	1,715	1,497	1,667	2,028	1,327	1,884	2,542	3,169	25,722	29,970	189
Sarawak .....	707	632	480	532	1,396	937	976	1,004	1,397	1,010	1,045	867	831	11,744	13,940	51
Sullivan .....	1,599	1,071	1,545	1,457	1,970	1,485	1,890	1,296	1,096	1,930	1,716	1,825	1,972	19,852	35,220	150
Sydenham .....	1,950	1,823	2,398	2,267	2,962	2,935	2,818	2,672	2,386	2,167	3,287	4,014	5,189	36,868	38,440	160
Total .....														386,298	526,340	2,685
SIMCOE.																
Adjala .....	364	1,457	488	671	1,043	865	560	1,236	1,139	818	2,121	1,748	1,929	13,464	23,440	138
Essex .....	2,252	3,002	1,678	1,494	2,121	2,882	2,886	2,755	2,107	1,931	2,166	1,801	1,656	28,771	30,000	207
Flores .....	1,586	1,896	1,580	757	1,323	2,332	1,312	1,777	2,048	3,146	1,747	2,001	1,663	23,168	34,070	200
Gwillimbury, West .....	932	833	596	775	808	877	733	1,158	1,113	856	1,026	761	1,142	11,610	25,750	110
Innisfil .....	1,615	1,691	862	1,144	1,532	1,389	1,165	1,730	1,517	2,377	3,006	2,530	2,701	23,488	38,350	176
Matchedash .....	348	475	292	161	420	259	201	442	174	295	264	233	214	3,778	3,270	51
Medonte .....	1,914	1,638	1,532	1,729	1,551	2,245	2,345	1,719	2,189	2,755	1,792	2,270	2,261	25,970	29,100	185
Northwassa .....	2,809	3,212	2,809	3,363	3,698	3,684	3,370	3,943	3,127	3,043	5,201	4,818	5,307	46,754	89,800	225
Orillia .....	1,929	2,890	662	2,256	2,075	2,638	1,997	1,556	1,397	1,377	2,345	3,784	3,037	27,943	29,800	207
Oro .....	646	1,532	1,088	1,324	1,874	1,534	1,461	2,141	1,048	1,323	1,757	1,218	1,624	18,340	37,770	200
Scumblade .....	857	1,669	1,810	1,372	1,614	1,298	1,374	1,792	1,038	845	1,714	2,029	2,179	20,241	25,000	165
Tay .....	945	1,811	1,281	2,098	1,851	1,473	1,560	1,515	1,430	1,073	1,503	1,623	1,321	20,083	30,650	110
Tecumseh .....	1,524	1,599	2,075	1,246	2,645	2,162	2,257	3,305	2,663	1,919	3,122	5,770	5,977	36,364	31,130	210
Thy .....	1,635	2,377	858	1,297	1,021	1,140	812	1,504	2,466	1,387	1,498	1,878	1,720	19,794	33,000	234
Toscoronto .....	531	504	625	408	531	412	553	533	867	1,044	610	725	1,151	8,841	12,590	132
Vespra .....	853	2,215	1,753	1,448	1,859	1,304	1,598	1,441	1,278	1,957	1,671	1,382	1,152	19,911	21,100	186
Total .....														348,860	494,200	2,736

## MIDDLESEX.

Name of Township.	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	Total.	Statute Labor in 10 years previous to 1896.	Estimated Road Mileage.
Adelaide	1,797	1,834	2,007	2,925	2,950	2,421	1,990	2,065	2,174	2,025	2,746	2,668	2,378	30,540	34,600	150
Barclay	2,752	2,630	2,508	3,011	3,482	3,270	3,609	3,389	2,805	2,686	4,351	4,203	3,376	42,252	28,560	110
Caradoc	3,671	3,587	2,978	6,048	4,912	2,900	3,117	2,730	4,021	3,715	3,983	3,149	3,149	49,760	35,410	175
Delaware	1,691	1,822	1,843	3,396	1,782	1,287	1,338	1,338	2,753	1,718	2,457	1,526	1,080	23,554	18,060	69
Dorchester	3,883	4,124	4,910	8,160	4,903	7,749	1,702	3,167	4,474	3,869	4,943	6,604	5,065	63,653	37,240	150
Exford	4,437	4,421	3,521	4,031	5,090	3,241	4,217	6,244	4,431	3,956	4,219	3,308	3,644	52,880	22,720	170
Lobo	4,679	3,144	4,778	4,585	4,917	3,226	3,433	4,301	3,652	4,199	5,531	3,815	4,832	54,692	25,280	223
London	11,688	7,774	11,560	11,404	11,435	13,077	9,408	15,209	13,109	13,299	14,730	21,823	11,135	165,731	63,510	297
McGillivray	3,949	4,338	3,975	5,243	5,223	3,965	3,518	4,125	3,550	5,009	5,069	6,282	4,238	62,324	50,000	148
McGillivray	2,716	1,907	3,100	1,938	2,933	1,965	2,377	2,612	2,460	4,754	2,189	1,790	2,751	33,382	25,000	104
McGillivray	2,708	2,325	2,605	2,651	2,097	2,427	1,375	1,063	1,891	1,705	2,026	2,087	2,425	27,925	27,190	165
Nissouri	2,003	3,086	6,056	4,054	4,146	3,942	3,792	4,392	3,834	3,349	5,533	2,452	1,535	32,574	29,200	114
Nissouri	7,925	6,071	6,971	6,022	5,627	6,387	5,668	5,515	6,084	6,813	6,796	6,824	8,274	84,477	37,900	140
Westminster	1,784	1,708	3,880	2,233	2,974	4,261	2,068	2,038	3,057	2,127	2,713	2,000	1,931	33,074	26,800	144
Williams, East	1,601	1,432	3,567	1,195	1,725	2,389	1,464	2,028	1,497	2,822	3,175	2,647	2,451	27,964	20,760	105
Williams, West	1,601	1,432	3,567	1,195	1,725	2,389	1,464	2,028	1,497	2,822	3,175	2,647	2,451	27,964	20,760	105
Totals														805,182	485,290	2,234

## OXFORD.

Blandford	1,475	910	1,392	961	1,096	1,707	1,063	1,247	895	2,567	2,745	1,627	2,401	20,086	23,130	87
Blenheim	3,604	2,102	4,301	3,913	4,183	5,469	4,023	4,181	5,507	2,984	1,747	4,774	6,152	55,940	55,940	175
Derham	1,349	1,566	1,998	2,553	3,506	3,882	2,800	2,974	3,349	4,629	3,971	4,726	3,393	44,786	32,480	156
Nissouri	1,620	2,084	2,032	1,822	2,334	1,810	2,803	2,247	2,710	2,709	3,735	3,930	3,904	33,740	33,740	135
Norwich, North	1,55	1,374	1,593	1,989	1,662	1,792	2,080	2,993	3,120	3,526	3,591	3,333	4,801	33,571	30,480	99
Norwich, South	1,049	827	2,199	2,189	2,058	1,782	2,392	1,884	2,446	1,760	2,481	3,749	3,254	30,120	30,120	100
Oxford, East	78	827	1,433	1,595	1,312	1,608	1,371	1,508	1,854	1,854	1,237	1,321	2,075	21,780	21,780	97
Oxford, North	498	1,285	1,083	1,099	1,030	2,836	1,193	1,286	1,921	1,467	1,704	1,478	1,456	18,054	18,054	63
Oxford, West	721	745	1,326	760	1,233	1,071	1,150	1,354	1,204	1,467	1,475	1,475	1,475	21,000	21,000	75
Zorra, East	4,780	3,844	5,021	4,467	4,391	7,982	4,162	4,408	5,721	5,898	8,203	9,413	7,350	76,202	46,650	155
Zorra, West	3,344	3,802	2,862	3,716	4,566	2,742	3,044	3,461	3,918	4,637	6,401	2,601	5,088	50,242	38,200	165
Totals														401,096	372,770	1,307

## BRANT.

Brantford	4,151	4,233	2,704	2,252	2,920	5,760	1,681	2,041	2,319	7,060	5,189	4,183	7,039	51,532	56,190	213
Barford	2,076	2,787	4,408	2,835	3,412	3,428	1,946	2,697	2,884	9,401	4,436	5,530	4,167	51,502	50,000	215
Dumfries, South	1,713	2,287	2,187	1,595	2,439	1,740	1,696	1,840	2,060	1,792	2,786	1,842	3,099	27,576	25,580	108
Oakland	393	29	102	112	171	227	64	167	180	275	142	165	453	2,672	10,700	30
Ontonaga	756	462	826	1,022	1,405	3,775	703	1,329	704	1,113	791	1,311	683	14,877	13,940	69
Totals														148,159	156,470	635

## PERTH.

Blanshard .....	3,067	3,481	4,201	3,899	4,598	4,016	1,994	3,157	2,680	3,837	4,579	4,208	5,382	48,799	27,420	138
Downie .....	5,226	3,112	1,684	3,407	5,707	5,162	1,394	2,951	3,035	2,788	4,553	2,806	6,297	54,922	29,605	124
Easthope, North .....	1,485	1,485	1,786	1,644	1,716	2,113	1,182	1,903	1,786	2,453	2,236	2,325	2,117	24,181	31,150	115
Easthope, South .....	1,725	1,480	1,792	1,649	1,716	2,113	1,182	1,508	1,399	1,697	2,053	2,315	1,778	23,481	19,870	70
Ellice .....	3,726	2,168	2,913	4,329	4,085	3,469	3,249	2,476	4,000	4,274	2,983	4,151	3,769	50,473	32,680	135
Elme .....	1,085	2,978	4,927	2,249	4,827	3,451	3,180	3,313	3,555	4,058	3,516	4,159	4,799	46,968	36,610	160
Elkarton .....	5,075	2,555	3,829	4,217	4,897	4,690	3,569	3,028	3,926	4,618	4,907	6,328	6,029	60,401	23,350	120
Hilbert .....	1,890	2,177	4,002	1,558	2,907	2,470	2,159	1,906	2,244	1,573	2,200	2,987	2,586	28,965	33,680	89
Hibbert .....	2,191	3,591	3,315	3,524	4,457	3,247	4,663	1,701	3,481	2,936	3,968	5,231	5,436	48,741	30,030	138
Logan .....	2,181	4,543	4,149	3,585	3,271	2,730	2,124	3,555	3,733	4,038	3,827	3,644	4,942	46,302	29,560	150
Morrington .....	1,630	1,280	1,410	985	1,111	1,771	960	1,190	1,478	1,439	1,544	2,009	1,221	18,028	28,420	148
Totals .....														451,564	312,270	1,387

## WELLINGTON.

Arthur .....	606	660	1,583	1,597	1,579	1,869	1,809	1,316	1,412	1,726	1,764	1,788	1,769	19,538	29,660	147
Ernosa .....	1,575	2,100	1,709	1,726	1,969	2,278	2,157	1,943	1,846	1,694	1,463	1,558	1,850	23,698	25,560	130
Erin .....	1,117	1,503	1,031	1,484	1,718	2,074	1,749	1,746	1,451	1,669	1,288	1,512	1,681	20,283	29,605	180
Gairfaxes, West .....	1,619	1,527	2,978	2,082	2,650	1,503	2,032	1,960	4,059	2,829	4,938	1,925	2,511	32,554	32,410	141
Garfield .....	1,690	1,391	1,324	1,584	1,241	1,908	1,572	1,710	1,885	1,671	2,263	1,765	1,713	22,317	17,630	110
Luther, West .....	884	1,229	1,425	923	1,092	1,092	882	1,012	715	947	920	1,009	1,190	13,329	26,210	100
Maryborough .....	2,150	1,465	2,945	2,639	2,934	2,868	2,057	2,008	1,840	2,342	2,983	4,156	4,156	33,064	38,110	168
Minto .....	3,215	2,185	3,010	3,303	2,539	2,504	2,010	2,258	1,773	2,912	2,098	2,730	2,508	33,105	32,510	192
Nichol .....	525	417	815	432	776	1,476	646	766	938	1,160	917	745	710	10,323	12,960	90
Peel .....	1,528	2,352	2,257	1,836	4,149	4,313	2,700	2,202	2,524	2,396	3,357	2,005	3,130	34,749	53,080	165
Pikington .....	1,024	1,439	1,544	927	962	1,339	1,225	1,120	965	1,390	1,468	1,269	924	15,336	17,230	90
Pushine .....	2,313	1,621	1,527	2,320	1,433	1,650	1,004	1,619	1,480	1,800	1,474	1,377	1,710	21,328	33,340	200
Total .....														279,824	357,280	1,733

## WATERLOO.

Dumfries, North .....	725	782	1,257	1,886	889	924	1,197	502	986	2,648	1,078	1,146	1,317	15,287	28,510	120
Waterloo .....	2,760	3,825	2,864	3,484	6,304	2,956	3,110	5,396	4,007	13,223	4,500	5,083	4,679	62,801	71,320	308
Wellesley .....	3,272	3,927	4,282	4,806	4,222	4,014	1,433	1,433	3,409	4,810	4,725	3,644	5,917	51,198	59,560	198
Wilnot .....	3,828	2,779	3,195	3,901	2,754	3,095	2,584	2,906	2,733	2,893	4,409	3,094	3,161	41,022	64,640	200
Woodwich .....	1,893	5,532	2,335	2,072	1,881	2,989	1,521	1,706	1,615	1,899	7,478	3,202	11,454	45,797	41,940	150
Totals .....														216,105	265,970	968

## DUFFERIN.

Amaranth .....	1,978	1,449	1,677	1,489	1,113	1,296	1,545	1,959	1,167	1,636	2,172	1,463	1,838	20,782	28,310	150
Gairfaxes, East .....	881	1,122	1,519	1,303	723	1,518	2,148	1,365	1,138	1,901	6,627	2,819	1,769	25,163	16,370	146
Luther, East .....	1,759	1,288	1,051	2,201	1,925	1,617	1,247	1,805	1,009	1,194	1,219	878	1,208	18,901	17,650	84
Melachton .....	1,413	1,594	1,440	1,781	2,170	2,039	1,864	1,684	1,192	1,492	1,882	1,607	2,513	22,701	35,550	168
Mono .....	1,334	3,466	2,890	2,563	2,730	2,400	2,391	1,713	1,964	2,727	2,711	1,671	1,971	30,501	32,100	225
Mulmur .....	650	1,146	1,542	1,321	1,931	1,330	1,579	1,157	1,032	1,210	1,579	1,629	1,590	17,916	32,890	198
Totals .....														135,964	162,870	971



## ROAD EXPENDITURE IN TOWNSHIPS—Continued

## LINCOLN.

Name of Township.	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	Total.	Statute Labor in 10 years previous to 1896.	Estimated Total mileage.
Castor .....	\$ 423	\$ 484	\$ 615	\$ 970	\$ 1,323	\$ 811	\$ 765	\$ 452	\$ 1,095	\$ 735	\$ 423	\$ 1,068	\$ 1,308	\$ 10,472	\$ 20,200	84
Clinton .....	398	364	453	416	1,889	981	1,809	56	1,613	1,933	1,903	2,011	2,126	15,311	11,000	75
Gainsboro .....	1,448	636	1,490	1,298	1,766	2,439	1,388	1,233	1,123	909	944	1,036	1,317	12,877	20,180	118
Grantham .....	572	661	911	1,277	1,323	1,277	1,079	1,159	548	1,000	1,353	1,396	666	12,775	21,950	54
Grimsby, North .....	428	574	798	2,114	1,778	1,778	1,247	1,775	1,435	1,784	1,396	2,314	1,631	18,052	18,770	60
Grimsby, South .....	393	208	852	473	991	765	400	1,011	1,083	317	1,229	991	1,008	10,053	10,840	60
Leamington .....	1,277	409	200	1,117	1,568	1,389	975	1,935	1,167	2,189	1,433	1,583	1,906	17,550	21,840	90
Niagara .....	635	583	1,424	470	1,893	1,839	1,493	1,199	1,256	1,459	1,878	2,822	2,530	19,490	16,280	120
Totals .....														121,478	158,050	691

## WENTWORTH.

Ancaster .....	8,556	4,559	3,670	3,136	4,025	4,543	2,513	4,823	3,119	5,089	6,381	6,077	6,064	62,565	34,450	125
Barton .....	1,408	911	1,021	1,782	1,515	2,478	1,815	2,026	1,777	2,478	3,005	2,496	2,176	22,948	24,020	39
Beverly .....	1,638	1,518	1,383	4,768	1,792	1,948	1,724	2,368	2,407	1,447	2,903	2,389	2,753	28,438	40,000	190
Binbrook .....	604	825	582	1,508	582	610	452	1,334	1,655	1,717	899	773	1,085	10,656	16,890	70
Binbrook, East .....	672	854	1,702	1,307	1,567	1,497	1,529	1,644	1,215	636	1,747	1,615	1,062	17,103	22,000	56
Flamborough, West .....	770	1,218	1,867	3,410	956	1,199	1,212	1,686	1,109	1,429	1,428	1,401	1,583	19,288	20,020	90
Flamborough, East .....	362	235	488	922	834	904	490	575	474	660	904	283	687	7,818	14,540	69
Glanford .....	572	434	794	974	1,456	3,881	2,890	2,926	3,139	3,368	3,806	3,074	2,945	30,319	46,070	84
Salfleet .....																
Totals .....														199,135	217,990	723

## HALTON.

Esquesing .....	2,273	2,016	2,340	2,365	1,571	2,628	1,160	1,512	2,387	1,600	5,401	5,408	2,773	33,434	33,560	198
Nassagaweya .....	970	1,187	1,302	1,067	1,681	1,963	1,569	1,814	2,089	1,661	2,130	2,180	2,635	21,692	25,510	133
Nelson .....	1,158	1,478	1,945	1,328	1,175	1,823	1,200	1,607	2,329	1,638	1,960	3,287	3,082	24,683	29,400	138
Totalgar .....	5,241	3,814	3,907	2,170	5,382	6,803	4,508	1,896	5,193	6,006	6,193	4,198	3,991	59,564	29,450	198
Totals .....														139,283	118,120	667

## PEEL.

Albion .....	1,569	2,299	1,740	1,580	1,800	2,179	1,025	1,350	2,118	1,413	2,192	2,063	2,872	24,230	23,000	168
Caledon .....	1,120	2,640	976	856	2,406	1,804	1,180	1,346	1,131	1,658	2,989	2,959	5,787	41,920	41,920	207
Chingacousy .....	2,192	3,570	4,040	2,940	3,017	2,165	2,060	2,256	3,636	4,297	5,749	2,342	2,952	40,616	39,470	240
Chingacousy, West .....	2,171	2,484	775	4,116	7,157	5,749	8,287	6,733	4,184	3,888	5,273	4,170	7,441	65,068	57,870	260
Toronto Gore .....	529	1,150	894	1,652	806	1,005	685	446	839	1,372	1,259	1,641	3,528	15,206	8,500	68
Totals .....														171,372	170,760	936

## YORK.

Etobicoke .....	2,647	4,655	7,800	5,839	3,756	4,564	5,608	4,266	3,089	6,018	6,712	5,472	6,982	67,478	28,730	84
Georgina .....	709	486	272	583	416	703	467	778	782	937	713	1,067	1,023	9,465	19,210	80
Grimsby .....	2,069	2,257	1,618	1,690	1,710	2,334	1,932	1,903	1,448	1,375	1,882	2,235	2,128	24,571	35,910	130
Gwillimbury, North .....	793	363	526	541	458	892	493	533	500	385	416	607	618	6,887	11,220	90
King .....	8,768	8,513	5,148	6,100	6,114	6,144	5,551	7,087	5,007	5,894	3,963	4,692	3,634	76,383	48,750	211
Markham .....	2,325	2,917	4,092	3,219	2,984	3,982	4,098	2,832	4,453	4,003	3,683	4,370	3,912	46,628	49,340	201
Scarborough .....	1,371	3,342	3,106	2,723	3,355	4,492	3,814	2,746	3,238	4,223	3,337	4,370	3,912	47,038	21,440	125
Vaughan .....	6,215	7,651	4,456	6,133	4,332	5,526	4,902	6,473	5,000	6,289	5,343	5,131	5,669	78,480	35,160	201
Whitechurch .....	1,213	1,442	1,538	1,777	1,062	1,277	951	1,803	1,530	1,468	2,314	1,155	1,898	19,908	33,340	158
York .....	21,504	32,536	38,092	39,603	41,636	22,659	23,337	15,100	15,219	16,354	20,874	20,277	17,823	325,774	111,300	155
Totals .....														702,712	401,250	1,436

## ONTARIO.

Brack .....	2,740	3,059	1,796	2,497	2,755	2,128	1,956	2,316	2,690	3,235	2,881	2,554	3,585	34,212	34,860	181
Mara .....	2,115	2,592	2,620	2,654	2,832	3,197	2,022	3,018	2,399	2,452	2,515	3,243	2,630	32,621	29,230	140
Pickering .....	4,493	20,077	10,541	3,392	4,363	3,977	3,549	3,408	2,840	4,422	4,410	7,983	6,967	80,335	99,930	275
Rama .....	990	519	938	583	590	730	786	732	1,725	1,158	464	810	855	10,890	9,870	110
Reich .....	1,577	3,114	2,356	2,000	1,603	1,692	1,692	1,483	1,995	1,652	1,736	2,026	2,776	26,561	42,300	130
Scott .....	1,828	2,304	1,855	2,028	1,906	2,137	1,483	1,763	1,458	1,250	1,392	1,131	1,705	20,250	20,020	120
Seaburg .....	1,390	255	214	217	105	274	248	347	246	177	133	169	85	2,000	5,620	28
Thorah .....	1,458	2,046	2,075	1,342	1,664	1,539	1,603	1,482	1,897	1,362	1,422	1,328	1,754	21,002	15,640	102
Thornburg .....	1,957	1,863	1,212	1,705	1,186	1,146	1,035	1,500	1,587	1,403	1,542	1,551	1,565	19,312	29,610	170
Whitby, E. ....	2,630	5,836	1,776	2,093	1,793	1,745	1,836	1,898	1,511	1,523	2,372	2,476	2,741	29,650	33,470	121
Whitby, W. ....	1,015	13,593	3,462	1,355	1,296	1,282	922	1,597	1,296	1,408	1,877	2,803	2,627	34,593	20,910	130
Totals .....														314,016	341,460	1,507

## DURHAM.

Cartwright .....	1,085	2,031	1,453	1,034	554	960	723	904	1,200	765	1,123	658	836	13,926	2,810	96
Chatham .....	1,351	1,626	1,397	1,815	2,562	1,784	1,108	2,011	1,721	1,768	2,286	1,840	2,224	23,536	35,560	180
Chatham, N. ....	1,831	3,874	2,423	2,180	2,597	2,582	2,707	2,186	2,899	2,819	2,879	1,981	2,835	32,455	37,920	280
Chatham, S. ....	3,029	5,012	2,207	2,908	2,743	4,066	2,973	3,930	3,224	3,211	3,659	3,557	4,053	44,812	40,000	204
Hope .....	1,123	2,839	1,885	1,973	1,371	1,720	1,765	1,621	2,461	1,881	2,276	1,726	1,777	24,041	40,830	189
Manners .....	1,111	1,420	1,249	1,229	1,656	1,140	636	1,271	2,030	974	1,070	1,916	1,777	17,429	35,070	207
Totals .....														157,479	210,290	1,165

## NORTHUMBERLAND.

Alnwick .....	809	743	482,27	731,81	560	480	571	511	511	737	807	736	841	8,809,13	7,980	100
Brimingham .....	1,082	1,293	822	1,119,22	1,402	826	1,397	1,459	1,459	1,356	1,428	1,781	1,601	16,673,00	37,360	150
Crambe .....	817	1,628	723,00	794,00	1,191	1,165	1,248	1,206	1,206	1,000	1,644	1,403	889	14,679,00	28,770	15
Hamilton .....	3,894	4,456	3,012,00	2,565,00	4,290	2,405	2,817	1,577	2,238	2,275	2,965	2,965	3,289	39,095,00	47,210	263
Hamilton, N. ....	7,417	4,093	2,732,00	2,564,00	2,665	1,424	1,848	2,139	2,437	2,437	2,436	2,623	2,758	37,315,00	48,560	183
Monaghan, S. ....	168	962	358,00	470,00	178	2,490	712	413	698	524	605	605	800	9,474,00	10,760	45
Murray .....	2,057	1,298,00	926,00	1,392,00	1,294	892	1,184	1,219	1,529	1,329	1,367	1,130	1,329	16,133,00	40,530	240
Perth .....	1,640	3,660	2,832,00	2,160,00	2,003	2,149	2,382	2,281	2,076	3,420	2,613	2,613	2,645	32,242,00	30,610	150
Seymour .....	1,398	1,895	3,018,00	1,282,00	1,363,00	5,725	1,465	1,458	1,458	4,103	5,420	1,176	3,697	39,130,00	26,120	198
Totals .....														211,170,13	277,990	1,344

ROAD EXPENDITURE IN TOWNSHIPS.—*Con.*

PRINCE EDWARD.

Name of Township.	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	Total.	Statute Labor in 10 years previous to 1896.	Estimated road mileage.
Ameliasburg.....	545	648	492	993	451	553	312	230	843	424	1,977	1,710	738	9,916	28,070	100
Attol.....	3	25	127	181	43	4	36	36	11	8	47	148	253	930	51,330	69
Hallowell.....	346	621	380	138	465	222	561	883	698	1,034	1,440	1,034	1,034	7,929	52,510	129
Hillier.....	338	182	215	182	375	143	156	615	308	190	378	828	288	3,698	24,500	130
Marysburg, N.....	26	73	174	371	406	157	85	159	134	116	147	147	264	2,387	23,570	69
Marysburg, S.....	21	105	178	121	122	276	82	40	253	84	40	278	40	1,715	17,410	69
Sophiasburg.....	250	464	329	416	344	321	269	408	405	304	469	517	738	5,294	31,600	129
Totals.....														31,878	199,430	635

## LENNOX AND ADDINGTON.

Adolphustown.....	233	222	265	191	201	181	194	254	227	244	211	173	263	2,799	4,000	20
Amherst Island.....	225	303	258	264	235	140	161	242	176	224	170	267	151	802	9,570	33
Camden, East.....	3,300	2,530	3,198	3,163	2,187	2,393	1,736	2,886	1,831	2,460	2,634	5,623	3,061	37,010	52,130	25
Denbigh, Abinger and Ashley.....	680	942	423	438	463	480	462	1,073	1,366	1,366	1,813	1,932	1,932	25,153	84,750	175
Ernesttown.....	2,628	1,025	2,170	2,491	2,310	2,280	1,161	1,671	1,622	1,360	1,205	1,027	1,230	13,215	24,330	70
Fredericksburg, N.....	452	807	838	333	634	402	633	2,634	923	2,157	758	680	1,025	8,806	10,290	45
Fredericksburg, S.....	383	651	836	671	631	1,063	678	1,187	182	170	217	151	188	3,578	7,330	100
Kaladar, Anglesea and Effingham.....	393	415	380	218	201	308	801	1,050	1,426	1,426	1,658	1,870	1,893	21,536	20,060	150
Richmond.....	1,861	2,218	1,883	1,739	1,220	1,801	891	1,670	1,450	674	536	562	517	10,847	26,060	185
Sheffield.....	1,040	1,411	1,662	1,234	660	1,096	559	965	511							
Totals.....														130,965	193,790	1,095

## FRONTENAC.

Barrie.....	27	34	18	96	29	34	17	331	61	42	10	26	56	470	3,850	50
Bedford.....	438	287	408	871	1,294	574	537	331	292	941	646	503	862	7,484	10,720	189
Clarendon, etc.....	97	35	47	515	908	55	412	83	66	14	70	96	65	831	7,610	100
Hinchinbrooke.....	390	314	507	507	507	441	61	580	613	132	712	972	722	7,936	11,470	90
Howe Island.....	171	100	48	100	12	18	17	21	6	79	59	162	162	764	2,960	25
Kempebec.....	470	324	173	174	323	630	175	301	194	499	365	250	165	4,013	7,460	90
Kingston.....	914	1,099	791	899	658	1,134	911	1,018	804	1,025	683	1,319	1,504	12,759	24,460	200
Loughborough.....	640	650	601	711	908	868	886	726	742	562	615	781	1,204	9,930	17,150	150
Olden.....	387	318	208	419	371	394	200	452	349	324	370	220	268	4,340	7,170	115
Oso.....	292	203	118	123	373	373	197	270	195	270	467	179	183	3,147	6,120	100
Palmerton, etc.....	252	124	246	119	186	43	58	65	214	1,414	283	189	150	2,087	6,760	90
Pittsburg.....	1,801	2,003	2,025	1,468	2,103	1,543	1,390	1,472	1,472	1,689	3,376	2,374	2,374	24,300	25,000	85
Portland.....	1,716	1,129	975	1,431	1,485	1,095	800	971	755	867	1,089	942	1,336	14,610	6,360	250
Storrington.....	166	300	273	359	448	457	127	455	450	371	580	487	376	4,819	17,950	100
Wolfe Island.....	159	502	50	419	412	247	461	79	262	220	610	360	757	4,538	14,000	90
Totals.....														102,108	169,840	1,724



## LEEDS.

Bastard and Burgess .....	300	378	258	290	290	395	270	663	438	647	686	682	1,126	6,303	31,290	205
Crosby, N. ....	398	342	406	432	564	676	1,031	490	534	677	843	402	971	7,766	9,000	132
Crosby, S. ....	263	97	307	216	133	169	537	669	539	558	516	409	391	4,804	18,450	111
Elizabethtown .....	2,758	4,114	2,225	1,885	2,527	2,564	2,861	2,753	2,875	2,795	2,136	2,853	1,973	33,879	46,540	225
Elmsley, South .....	436	262	348	317	416	527	356	453	585	388	254	285	1,556	6,183	6,990	66
Kitley .....	876	623	593	1,256	736	738	626	680	509	1,109	1,195	1,546	1,199	11,686	19,370	100
Leeds and Lansdowne, Front .....	2,937	11,770	2,654	3,100	3,114	3,477	2,908	2,635	3,410	3,947	3,735	4,709	5,788	54,181	35,000	150
Leeds and Lansdowne, Rear .....	621	732	271	892	843	573	655	826	842	588	705	1,388	1,615	10,491	8,850	100
Yonge and Escott, Front .....	920	985	821	904	751	676	709	738	649	2,841	3,016	1,938	1,536	16,484	24,680	165
Yonge and Escott, Rear .....	84	117	60	39	89	91	112	112	62	196	208	540	271	1,981	13,610	50
Totals .....														153,761	213,420	1,304

## GRENVILLE.

Augusta .....	1,747	2,476	2,237	2,025	2,097	1,771	1,915	1,642	1,890	1,809	800	1,443	1,417	23,209	37,350	222
Edwardsburg .....	2,026	1,638	2,133	1,594	1,852	1,227	1,850	1,159	1,633	1,046	1,341	1,701	1,053	20,233	40,480	300
Gower, South .....	170	380	245	128	347	322	233	703	374	108	230	292	366	3,898	10,220	60
Qxford .....	488	1,035	793	1,967	1,412	1,311	702	1,035	365	403	487	936	1,660	12,584	58,820	177
Wolford .....	94	198	317	523	380	226	674	509	450	349	319	436	320	4,795	24,060	138
Totals .....														61,749	150,930	897

## DUNDAS.

Matilda .....	4,149	3,876	1,252	1,470	2,577	1,840	1,452	1,513	1,309	1,446	1,923	2,055	2,097	26,959	56,690	125
Mountain .....	1,627	1,967	1,177	993	1,688	1,328	1,428	4,307	3,337	1,041	1,729	3,341	6,709	39,692	34,210	100
Williamsburg .....	1,352	1,309	973	1,512	1,056	1,676	999	1,370	1,076	1,065	4,075	4,207	2,580	23,230	49,690	177
Winchester .....	4,347	2,636	983	1,572	2,471	2,262	2,736	3,397	2,629	2,918	2,750	4,027	2,955	35,713	38,730	168
Totals .....														116,614	178,730	570

## STORMONT.

Cornwall .....	3,470	3,132	2,210	2,204	1,986	2,239	2,288	1,831	2,337	3,018	2,220	2,870	3,980	35,805	54,450	145
Finch .....	3,689	8,438	2,653	2,676	2,243	3,099	2,681	2,847	1,712	1,103	1,678	3,948	4,346	41,113	31,710	130
Osnabrock .....	1,970	1,832	1,386	1,467	1,225	1,179	1,536	1,575	602	1,078	3,361	2,789	2,352	22,312	55,990	185
Roxborough .....	1,240	2,463	2,385	1,468	1,371	1,379	1,437	1,445	1,583	1,391	1,980	2,039	2,435	22,636	36,350	200
Totals .....														121,866	178,500	660

## GLENGARRY.

Charlottenburg .....	2,188	2,518	2,572	7,220	7,865	2,390	2,126	1,532	895	2,614	3,194	1,016	4,064	40,203	49,990	200
Kenyon .....	1,753	1,294	1,910	1,882	2,425	1,400	992	1,411	1,411	1,866	1,236	1,929	2,719	21,715	40,780	231
Lancaster .....	848	1,446	1,516	1,376	1,480	1,535	936	2,022	848	1,541	1,274	1,753	2,836	19,431	30,140	171
Loehel .....	709	1,302	1,187	1,771	1,215	1,698	819	1,142	1,607	1,515	1,696	1,177	1,888	17,726	47,600	200
Totals .....														99,075	168,510	892

## ROAD EXPENDITURE IN TOWNSHIPS.—Continued.

PRESBURY.

Name of Township.	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1901	Total.	Statute Labor in 10 years pre- vious to 1896.	Estimated road mileage.
Alfred .....	\$ 2,080	639	242	795	1,142	\$ 807	\$ 1,171	\$ 1,016	\$ 989	\$ 941	\$ 1,546	\$ 745	\$ 12,716	\$ 15,820	100
Caledonia .....	313	387	633	582	632	333	330	763	1,477	525	715	1,110	8,602	15,660	132
Hawkesbury, East .....	804	841	632	967	391	477	755	886	732	469	302	1,009	9,291	29,670	115
Hawkesbury, West .....	473	252	581	328	338	153	367	411	199	267	246	344	4,289	13,760	73
Longueuil .....	71	217	78	137	124	52	32	91	36	120	56	94	1,285	8,790	30
Plantagenet, North .....	1,628	849	1,248	1,208	1,405	2,146	795	1,509	1,100	888	1,312	3,316	19,070	20,030	100
Plantagenet, South .....	1,136	1,470	1,097	1,062	2,189	660	1,003	1,250	1,361	1,212	1,437	2,376	18,155	22,710	130
Totals .....													73,408	126,140	702

RUSSELL.

Cambridge	994	1,912	908	1,188	1,049	843	1,053	1,047	1,779	1,062	3,103	2,093	12,274	29,365	23,220	100
Clarence	1,752	2,106	993	1,258	1,651	2,168	1,791	2,415	1,494	1,362	2,326	1,649	2,631	23,909	27,190	100
Cumberland	1,787	1,973	1,769	2,480	3,493	2,895	3,778	2,747	3,185	2,964	3,333	1,231	2,312	31,547	31,040	150
Russell	1,019	1,262	1,960	4,285	1,481	3,142	1,508	1,871	2,252	1,448	1,426	2,638	2,752	27,044	28,320	150
Totals														111,865	109,770	500

CARLETON.

Fitzroy .....	1,066	965	985	1,472	1,894	1,543	1,337	1,840	2,375	2,059	2,273	2,176	1,757	21,852	18,450	150
Gloucester .....	1,053	1,099	1,143	1,439	1,911	2,063	1,399	2,135	2,348	1,869	2,198	3,368	8,029	30,344	42,940	255
Goulbourne .....	483	917	679	747	733	1,191	1,453	1,148	1,171	1,187	1,154	1,315	2,705	15,008	25,280	192
North Gower .....	824	423	760	701	1,002	1,194	1,175	1,013	649	798	907	982	1,385	18,040	80	80
Huntley .....	708	955	1,500	804	1,002	1,194	1,175	1,013	649	798	907	982	1,385	16,421	13,290	180
March .....	191	372	253	192	588	281	306	380	162	372	393	504	473	4,150	9,210	84
Marlborough .....	208	307	373	475	508	147	312	351	572	918	582	378	271	5,320	16,900	108
Napan .....	1,979	2,463	1,280	1,848	2,356	1,939	1,375	2,104	2,432	1,415	2,799	2,171	2,100	26,261	28,240	184
Osgoode .....	1,653	1,622	1,268	1,437	1,437	2,011	1,747	1,837	2,496	2,818	2,070	3,378	3,636	37,452	44,800	273
Torbolton .....	267	228	192	235	213	245	255	586	429	162	297	316	296	3,721	4,000	78
Totals .....														162,648	221,150	1,644

RENFREW.

Admaston .....	152	433	255	294	336	451	1,065	1,692	479	251	1,188	619	1,139	8,297	43,690	80
Algoma, South .....	75	25	28	30	58	10	10	31	4	10	22	35	39	372	3,350	60
Alice, etc .....	208	501	243	281	132	278	119	998	221	4	214	331	226	3,164	8,750	120
Bagot and Blythfield .....	3,231	236	531	370	445	373	447	1,192	706	532	299	326	290	7,950	6,450	150
Bromley .....	244	281	281	469	346	433	661	565	723	474	463	390	736	11,830	11,830	100

Brongham .....	30.	57.	35.	65.	22.	4.	16.	140.	136.	20.	525.	2,530	54
Brudenell and Lyndoch.....	77.	51.	12.	140.	141.	26.	43.	103.	137.	108.	1,371.	6,360	80
Grattan .....	289.	180.	154.	592.	592.	500.	355.	94.	271.	223.	3,482.	6,830	160
Griffith, etc .....	68.	92.	103.	70.	97.	93.	58.	56.	146.	20.	2,157.	2,800	120
Hagarty, et al .....	120.	217.	127.	669.	505.	384.	160.	736.	329.	872.	4,878.	7,550	180
Head, et al .....	85.	201.	9.	6.	4.	216.	.....	4.	44.	1.	153.	3,160	50
Horton .....	123.	201.	241.	153.	451.	180.	252.	269.	101.	352.	3,597.	10,360	111
McNab .....	391.	2,136.	725.	1,130.	1,022.	821.	585.	3,864.	1,953.	1,692.	19,570.	22,920	150
Pembroke .....	101.	87.	.....	50.	29.	210.	136.	161.	70.	641.	87.	5,670	24
Petcrowa .....	188.	37.	124.	169.	227.	132.	62.	28.	135.	339.	1,554.	3,630	50
Radelife and Raglan .....	255.	161.	150.	122.	62.	94.	79.	139.	167.	221.	1,978.	4,470	60
Rolph, Buchanan and Wylie.....	50.	60.	45.	8.	91.	43.	50.	9.	43.	16.	472.	4,840	100
Ross .....	203.	313.	319.	942.	959.	721.	691.	536.	969.	721.	8,556.	12,000	150
Sebastopol .....	38.	66.	57.	72.	14.	63.	84.	46.	112.	34.	736.	3,080	55
Stafford .....	94.	211.	173.	267.	106.	133.	262.	189.	140.	412.	2,596.	7,350	60
Westmeath .....	2,471.	828.	925.	1,011.	514.	1,095.	1,117.	2,540.	925.	854.	15,656.	16,070	200
Wilberforce .....	176.	224.	244.	258.	476.	571.	337.	322.	550.	443.	5,074.	11,130	180
Totals .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	99,116.	174,820	2,294

## LANARK.

Bathurst.....	403.	594.	657.	319.	685.	304.	463.	405.	682.	671.	626.	701.	348.	25,000	180
Beckwith .....	595.	776.	1,078.	878.	1,067.	1,227.	1,769.	1,469.	1,485.	1,061.	1,874.	1,900.	1,010.	16,189.	15,000
Burgess, North .....	159.	109.	133.	123.	107.	204.	91.	159.	98.	168.	172.	193.	552.	6,580	20
Dalhousie, etc.....	479.	891.	1,037.	928.	871.	783.	829.	800.	387.	799.	594.	832.	843.	2,268.	17,340
Darling .....	171.	163.	93.	123.	84.	91.	70.	355.	65.	68.	178.	1801.	150.	6,640	50
Drummond .....	631.	784.	672.	783.	988.	1,541.	749.	786.	1,542.	1,098.	753.	1,753.	2,314.	14,394.	20,110
Emsley, North .....	532.	206.	297.	313.	467.	212.	253.	201.	303.	620.	330.	330.	474.	3,900.	80
Laurel .....	359.	466.	707.	687.	514.	610.	513.	390.	297.	405.	279.	468.	776.	6,471.	15,550
Lavant .....	275.	386.	306.	203.	113.	69.	237.	437.	286.	104.	151.	62.	2,857.	3,540	50
Montague .....	268.	308.	545.	1,008.	246.	576.	662.	672.	779.	423.	903.	932.	763.	31,065.	30,380
Pakenham .....	1,068.	807.	772.	915.	996.	1,748.	1,059.	1,020.	1,248.	685.	1,690.	1,041.	18,069.	33,190	120
Ramsay .....	1,153.	1,263.	976.	797.	1,328.	1,955.	1,392.	1,875.	1,571.	1,250.	1,964.	2,876.	23,899.	21,510	150
Sherbrooke, South.....	315.	265.	58.	144.	163.	261.	151.	240.	210.	112.	175.	117.	299.	6,770	90
Total .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	179,510	1,475

## VICTORIA.

Bexley.....	104.	41.	149.	111.	171.	150.	640.	121.	107.	302.	237.	211.	2,434.	7,690	60
Carden .....	162.	228.	628.	353.	193.	165.	284.	83.	79.	207.	262.	405.	72.	4,800	90
Dalton .....	116.	221.	220.	235.	235.	190.	194.	258.	137.	74.	258.	257.	285.	3,520	50
Eldon .....	768.	1,273.	1,694.	1,297.	1,428.	1,649.	950.	747.	1,359.	1,551.	1,647.	1,993.	1,513.	18,831.	25,860
Emu .....	2,025.	2,188.	1,909.	1,480.	1,738.	1,375.	576.	717.	1,173.	1,602.	2,035.	5,563.	1,840.	24,251.	23,440
Fenelon .....	724.	926.	509.	699.	612.	567.	702.	816.	2,247.	1,888.	1,170.	1,475.	1,146.	12,481.	23,680
Laxton, etc.....	4.	7.	189.	99.	55.	146.	201.	256.	230.	186.	124.	337.	201.	2,035.	5,190
Mariposa .....	2,004.	2,251.	2,074.	1,187.	2,135.	1,387.	1,647.	2,558.	1,889.	1,218.	1,823.	3,474.	3,821.	40,710.	225
Ops .....	2,403.	3,224.	3,449.	3,001.	3,449.	4,318.	3,475.	3,624.	3,293.	3,316.	4,374.	3,794.	3,901.	25,310.	180
Somerville .....	681.	268.	645.	618.	618.	571.	989.	524.	496.	659.	605.	726.	726.	14,250	150
Verulam .....	1,217.	1,384.	1,583.	2,214.	1,532.	2,047.	714.	963.	480.	2,032.	444.	1,095.	1,247.	17,532.	200
Totals .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	195,910	1,325



## ROAD EXPENDITURE IN TOWNSHIPS.—Continued.

## PETERBOROUGH.

Name of Township.	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	Total.	Statute Labor in 10 years pre- vious to 1896.	Estimated road mileage.
Asphodel	1,410	1,586	1,855	1,925	2,072	2,220	2,370	2,520	2,670	2,820	2,970	3,120	3,270	34,200	15,360	111
Barnum, etc.	1,500	1,700	1,850	1,950	2,050	2,150	2,250	2,350	2,450	2,550	2,650	2,750	2,850	29,400	10,410	200
Beaumont, etc.	1,300	1,400	1,500	1,600	1,700	1,800	1,900	2,000	2,100	2,200	2,300	2,400	2,500	25,600	9,300	100
Clarendon	1,100	1,200	1,300	1,400	1,500	1,600	1,700	1,800	1,900	2,000	2,100	2,200	2,300	23,600	8,400	100
Clinton	1,000	1,100	1,200	1,300	1,400	1,500	1,600	1,700	1,800	1,900	2,000	2,100	2,200	22,600	7,600	100
Dumfries	900	1,000	1,100	1,200	1,300	1,400	1,500	1,600	1,700	1,800	1,900	2,000	2,100	21,600	6,600	100
Ennisville	800	900	1,000	1,100	1,200	1,300	1,400	1,500	1,600	1,700	1,800	1,900	2,000	20,600	5,600	100
Garfield, etc.	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500	1,600	1,700	1,800	1,900	19,600	4,600	100
Harvey, etc.	600	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500	1,600	1,700	1,800	18,600	3,600	100
Marbleton	500	600	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500	1,600	1,700	17,600	2,600	100
Monticello, North	400	500	600	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500	1,600	16,600	1,600	100
Monticello, South	300	400	500	600	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500	15,600	600	100
Smith	200	300	400	500	600	700	800	900	1,000	1,100	1,200	1,300	1,400	14,600	1,000	100
Totals	15,071	16,543	18,114	19,685	21,256	22,827	24,398	25,969	27,540	29,111	30,682	32,253	33,824	353,992	150,940	1,492

## HALBURTON.

Ansion and Hindon	147	185	16	86	107	84	40	128	138	99	127	107	108	1,369	1,410	30
Cardiff	152	133	117	99	57	188	80	24	29	89	187	64	98	1,407	8,350	76
Dysart, etc.	374	700	1,068	728	1,831	782	689	1,036	701	1,045	855	1,035	1,254	12,898	8,730	200
Glanmoran	269	170	107	41	132	63	42	135	89	53	182	87	141	1,541	2,410	100
Latterworth	321	491	108	111	283	108	111	108	134	151	213	126	314	2,002	3,330	60
Minden	389	174	208	353	592	208	504	337	477	484	300	379	527	5,192	6,880	108
Monmouth	38	102	48	36	38	61	8	66	73	62	36	8	119	690	3,060	50
Sherborne, McTulloch, Livingston & Co.	207	157	189	419	186	179	528	288	263	118	783	564	718	2,183	4,500	105
Shawdon	156	81	91	90	126	50	127	246	264	116	102	142	84	1,695	4,130	80
Totals	1,561	2,071	2,157	2,304	2,540	2,304	2,304	2,304	2,304	2,304	2,304	2,304	2,304	32,502	37,800	809

## HASTINGS.

Bangor, etc.	437	204	255	218	269	178	274	177	171	344	287	286	294	3,344	4,350	84
Carlow (and Mayo)	(165 234)	138	143	143	233	604	228	322	224	224	241	289	421	3,468	3,770	50
Clonsilla (and Faraday)	(539 490)	278	220	239	217	217	217	217	207	207	205	211	256	3,549	7,880	100
Elzav, etc.	198	253	278	245	829	651	335	308	485	375	685	639	523	5,774	6,370	75
Faraday	1,315	1,491	1,889	1,889	1,220	1,209	325	735	1,257	1,378	1,586	1,009	1,495	16,905	34,240	175
Hungerford	233	233	207	207	257	257	325	284	243	226	273	266	288	2,975	22,270	50
Limrick	435	299	761	804	583	742	680	527	493	493	324	353	615	6,281	2,540	50
Madoc	402	509	532	523	651	651	448	636	493	627	486	378	615	7,169	20,600	100
Marmora and Lake	609	455	865	997	1,406	213	478	231	217	228	288	1,122	725	10,205	14,420	75
Mayo	456	670	462	462	650	213	478	231	217	228	288	1,122	725	10,205	2,670	48
Monteagle and Herschel	604	414	819	738	709	361	504	370	471	613	507	261	324	5,835	10,350	50
Rawdon	211	816	970	493	573	25	504	370	471	613	507	261	324	5,835	32,730	150
Sidney	941	465	638	773	788	973	1,263	1,464	1,495	1,692	1,613	1,451	3,149	13,158	14,250	200
Thurlow	941	465	638	773	788	973	1,263	1,464	1,495	1,692	1,613	1,451	3,149	13,158	48,970	120

Tudor and Cashel.....	313	475	363	416	528	497	478	460	422	393	567	581	660	6,156	4,280	100
Tyendinaga.....	1,175	2,229	1,125	1,074	1,180	1,203	1,131	1,046	1,078	1,353	1,199	1,139	1,378	15,810	43,320	200
Wollaston.....	398	303	260	428	330	332	408	440	352	454	580	451	473	5,249	3,340	50
Totals.....														135,812	281,400	1,749

MUSKOKA.																
Brunel.....	160	175	281	454	455	398	559	389	343	592	202	728	722	5,488	3,360	120
Cardwell.....	49	62	145	206	138	41	97	112	110	195	107	215	254	1,731	9,970	60
Chaffey.....	320	408	432	398	375	554	346	482	596	524	378	511	534	5,865	8,430	250
Draper.....	955	401	575	609	493	600	427	851	607	320	250	611	1,006	8,758	7,080	59
McLean and Ridout.....	218	78	94	121	179	158	357	390	221	325	271	202	1,564	3,133	5,610	90
Macaulay.....	905	409	331	327	565	728	771	820	691	758	422	675	1,128	8,530	8,390	100
McDora and Wood.....	240	683	559	460	363	675	873	601	892	669	700	977	1,557	9,249	6,830	100
Monck.....	321	379	308	296	279	376	435	355	356	348	525	658	1,153	9,249	8,410	40
Morrison.....	92	334	416	189	516	337	331	284	320	347	215	305	289	3,875	5,890	60
Muskoka.....	465	310	283	234	433	211	224	284	371	352	222	604	729	5,079	5,340	84
Oakley.....	131	423	244	234	319	243	218	223	165	41	274	248	326	3,275	2,660	41
Ryder.....	131	268	179	90	323	233	157	223	108	108	110	109	294	2,890	4,850	38
Stephenson.....	472	384	491	746	767	950	741	625	906	506	463	947	2,132	10,130	7,980	120
Stisted.....	422	517	410	276	400	320	307	351	527	382	353	485	391	5,201	5,720	132
Watt.....	155	165	222	353	245	195	307	225	377	482	192	258	343	8,574	8,190	105
Totals.....														\$82,067	\$82,710	1,399

PARRY SOUND.																
Armour.....	71	212	46	279	198	204	117	157	317	341	46	354	202	2,498	9,530	90
Carling.....																
Chapman.....	60	46	110	62	16	461	64	371	246	152	202	94	261	2,035	7,700	48
Christie.....	121	210	147	110	202	244	347	125	123	230	199	429	110	1,129	3,720	45
Foley.....	26	29	30	20	113	207	113	86	53	119	74	62	131	2,697	4,390	80
Hagerman.....	146	104	381	150	263	249	137	339	146	121	175	107	228	2,546	1,110	15
Hinsworth, N.....																
Hinsworth, S.....	73	48	179	118	187	118	187	183	206	342	196	500	623	3,142	12,710	60
Humphrey.....	156	132	170	339	388	227	226	295	196	185	234	142	277	2,967	5,080	60
Joly.....																
McDougall.....	248	206	195	275	179	342	324	375	249	272	458	169	428	3,720	3,830	60
McKellar.....	240	180	191	246	198	468	462	751	104	357	230	268	270	3,955	5,860	75
McMurrich.....																
Macfar.....	29	134	120	130	157	130	140	282	300	335	99	251	262	2,151	8,780	60
Nipissing.....	69	255	130	125	2	51	48	56	31	32	106	53	302	1,800	8,700	60
Perry.....	42	161	282	287	362	560	208	119	315	349	394	453	441	3,973	6,350	30
Ryerson.....	23	49	160	8	140	76	125	110	174	102	84	261	265	1,571	12,810	120
Strong.....	74	254	469	93	230	255	90	342	283	60	340	154	205	2,849	7,640	90
Totals.....														\$40,093	\$113,030	1,066

NIPISSING.																
Bonfield.....	180	103	226	77	25	74	348	319	318	259	204	206	658	2,997	6,880	75
Caldwell.....																
Calvin.....	72			31	41	184	230	194	228	45	123	273	1,192	2,470	4,190	15
Cameron.....	72	10	9			34	50	48	49	10	80	18	229	662	4,130	65
Ferris.....	78	108	52	94		306		14	10	17	34	21	14	509	1,870	25
McKim.....	2,839	5,095	3,283	1,355	307	478	841	633	359	367	1,077	390	390	1,373	6,000	45
Mattawan.....		44	73	45		13	57	11	1	28	85	42	515	17,996	2,800	15
Papineau.....	135	30	31	44	61	17	24	2	25	3	7	1	8	388	2,570	50

## ROAD EXPENDITURE IN TOWNSHIPS.—Continued.

## NIPESING.

Name of Township.	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	Total.	Statute labor in 10 years previous to 1896.	Estimated road mileage.
Ratter and Dunder.	576	822	503	1,237	784	1,122	1,605	154	62	186	399	14	139	800	5,360	75
Springfield.	3,347	1,351	219	1,833	165	238	137	240	212	181	360	395	672	7,900	2,880	90
Wildfield.																
Totals.														\$15,726	\$40,030	470

## MANITOULIN.

Assignack	61	172	47	37	67	208	302	297	457	326	257	346	319	2,896	8,610	90
Billings.	69	34	46	46	76	100	284	54	28	241	181	189	145	1,393	4,760	60
Burpee.						23	106	36	29	36	8	14	14	1,370	3,000	30
Carnarvon.	42	214	312	92	25	198	75	57	263	55	113	261	158	1,865	3,800	75
Cockburn Is.	500	162	217	135	112	230	2	150	72	18	5		52	1,655	1,600	20
Gordon.	154	125	116	44	194	83	102	175	450	164	250	269	411	2,537	2,790	75
Howland.	277	87	104	82	405	118	109	118	284	117	182	97	582	2,449	7,670	75
Sandfield.	34	68	3			22			50	6	127	10	57	302	1,970	45
Tekummah.	41	36	30	72	108	49	82	29	131	57	110	200	145	1,090	3,730	60
Totals.														\$14,557	\$35,520	530

## ALGOMA.

Balfour.		49	105	104	199	386	355	338	157	250	481	345	258	3,027	3,710	27
Drury, Denison and Graham.						96	169	161	331	604	190	299	417	2,095	1,970	
Hallam.	28	96	24	48	122	200	919	912	242	263	154	367	274	3,395	3,900	36
Hilton.	43	76	119	5	7	195	72	120	185	92	335	376	181	1,874	3,350	35
Johnston.		23	125	67	44	239	110	88	132	242	313	491	203	2,068	5,350	86
Johnson, etc.				104	115	421	257	294	169	415	388	252	367	3,022	6,570	30
Lard.				9		194	137	125	131	47	466	99	385	1,732	7,080	27
Macdonald, etc.						273	131	229	267	210	282	221	420	2,157	3,920	51
Nairn.				148	110	120	362	163	18		2		5	34	520	
Plummer, etc.									299	254	90	222	1,449	3,212	3,470	14
Prince.				117		37	71	94	5	5	118	23	100	251	2,580	30
Rayside.				322	265	81	335	822	111	369	139	502	135	1,774	3,370	75
St. Joseph's.	115	399	374			25	128	398	709	326	644	497	735	6,277	2,460	75
Salter, etc.				1,376	1,012	1,187	1,084	2,127	287	293	167	207	982	1,862	7,380	100
Sault Ste. Marie.	762	2,078	1,468	192	101	1,157	282	358	199	1,815	2,650	3,462	6,352	27,863	6,100	41
Thessalon.	33	340	1,002			186				256	333	405	715	4,402		
Totals.														\$65,045	\$61,850	577



ROAD EXPENDITURE IN TOWNSHIPS.—*Concluded.*

## THUNDER BAY.

Name of Township.	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	Total.	Statute Labor in 10 years pre- vious to 1896.	Estimated road mileage.
Needling .....	\$ 3,823	3,472	19,457	7,594	7,728	2,646	496	506	825	384	578	1,025	582	49,116	\$	100
Oliver .....	438	448	149	146	138	134	154	297	156	254	244	334	391	3,278	3,320	90
Shumlin .....	2,069	3,244	7,815	529	715	475	42	780	235	297	323	852	644	18,620		20
Schreiber .....													4	4		
Totals.....														\$71,018	\$3,320	210

## RAINY RIVER.

Alberton.....						348	699	325	30	265	290	1,957	2,690	30	
Keewatin.....						124	482	240	618	781	1,284	11,770	4,317	10	
McIlvaine.....									856	623	1,650	4,317	20		
Van Horne.....									22		20	65			
Totals.....												\$18,109	\$2,690	40	

## SUMMARY.

County.	Total money expended 1889-1901.	Statute Labor 10 years.	Road mileage.
	\$	\$	
Essex.....	328,452 00	259,990	1,198
Kent.....	292,553 00	284,380	1,681
Elgin.....	431,812 00	255,800	1,238
Norfolk.....	157,832 00	227,130	1,237
Haldimand.....	98,087 00	196,680	882
Welland.....	94,958 00	221,160	897
Lambton.....	476,975 00	319,790	1,906
Huron.....	468,782 00	460,330	2,217
Bruce.....	370,169 00	412,860	2,261
Grey.....	386,298 00	526,340	2,685
Simcoe.....	348,860 00	494,200	2,736
Middlesex.....	805,182 00	485,290	2,234
Oxford.....	401,096 00	372,770	1,807
Brant.....	148,159 00	156,470	635
Perth.....	451,564 00	312,270	1,387
Wellington.....	279,824 00	357,280	1,733
Waterloo.....	216,105 00	265,970	968
Dufferin.....	135,964 00	162,870	971
Lincoln.....	121,478 00	158,050	691
Wentworth.....	199,135 00	217,990	723
Halton.....	139,283 00	118,120	667
Peel.....	171,372 00	170,760	936
York.....	702,712 00	401,250	1,436
Ontario.....	314,016 00	341,460	1,507
Durham.....	157,479 00	210,290	1,165
Northumberland.....	214,170 13	277,900	1,344
Prince Edward.....	81,878 00	199,050	695
Lennox and Addington.....	130,965 00	193,790	1,095
Frontenac.....	102,108 00	169,840	1,724
Leeds.....	153,761 00	213,420	1,304
Grenville.....	64,749 00	150,930	897
Dundas.....	116,614 00	178,720	570
Stormont.....	121,866 00	178,500	660
Glengarry.....	99,075 00	168,510	802
Prescott.....	73,408 00	126,440	702
Russell.....	111,865 00	109,770	500
Carleton.....	162,648 00	221,150	1,644
Renfrew.....	99,116 00	174,820	2,294
Lanark.....	131,870 00	179,510	1,475
Victoria.....	165,285 00	195,910	1,525
Peterborough.....	135,092 00	150,940	1,492
Haliburton.....	32,502 00	37,860	809
Hastings.....	135,842 00	281,400	1,749
Muskoka.....	82,067 00	92,710	1,399
Parry Sound.....	40,093 00	113,030	1,066
Nipissing.....	45,726 00	40,030	470
Manitoulin.....	14,557 00	35,520	530
Algoma.....	65,045 00	61,850	577
Thunder Bay.....	71,018 00	3,320	210
Rainy River.....	18,109 00	2,690	40
Total.....	10,117,576 13	10,947,110	60,771

## STATEMENT.

Average yearly money expenditure.....	\$778,213 55
"    Statute labor (days).....	1,094,711 00
Total yearly value, money and labor.....	\$1,872,924 55







*(Sessional Paper No. 29.)*

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Report of  
**The Bureau of Labour**  
For the Year  
1903

Presented to the Legislature, 24th March, 1904

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On account of loss of the original by fire this Report has been delayed  
and will appear in

**Vol. XXXVII., Part VIII., 1905.**





REPORT  
OF THE  
ONTARIO  
GAME COMMISSION  
FOR THE YEAR 1903

PRINTED BY ORDER OF  
THE LEGISLATIVE ASSEMBLY OF ONTARIO



TORONTO:  
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Printer to the King's Most Excellent Majesty  
1904



*T O R O N T O :*

WARWICK BROS. & RUTTER, LIMITED PRINTERS.

REPORT  
OF THE  
ONTARIO GAME COMMISSION  
1903.

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*His Honor the Lieutenant-Governor of the Province of Ontario :*

Sir,—We, your Commissioners, beg to present to you the Twelfth Annual Report of the Ontario Game Commission.

We regret that owing to the wet and cold weather during the hatching season, our upland game birds suffered severely. In the Counties of Essex, Kent, Middlesex and Lambton we started out in the spring with a good crop of old birds, and sportsmen looked forward with hopeful feelings to the fall months ; but in many districts where quail and partridge had been fairly plentiful for several years past, not a bird was to be found ; clearly showing the disastrous results of the unfavorable weather during the nesting season.

Your Commissioners feel greatly concerned about the future of that gamiest of all game birds, the Quail ; and they have had under consideration several plans for keeping up a fair stock of birds in the Province. The experiment of breeding them in confinement for turning down purposes will be tried this year on a small scale, and if successful we hope to be able to establish hatcheries in different counties.

Owing largely to the destruction of their haunts, Woodcock have become all but extinct in many parts of the Province ; but where local conditions are favorable, fair bags of these beautiful game birds were made this fall. The same remarks apply to Snipe.

Favorable reports have been received from many of the Duck preserves ; and, while on the whole, duck may not have been as plentiful as they were in the season of 1902, still good sport was had throughout the season. It is gratifying to know that the Black Duck is coming to use in increasing numbers year by year ; and as this duck is considered by many to be among the best for the table, we trust that the present good stock will be maintained.

Last fall your Commissioners made an importation from Europe of that noble game bird, the Capercaillie. The birds were set at liberty in the Algonquin Park, a spot considered by those competent to judge, admirably adapted by Nature for their requirements. The results will be anxiously watched, and if the birds do well they will prove a very valuable addition to the game birds of the Province. In this connection much valuable information and assistance was rendered by one of your Commissioners, Mr. H. S. Osler, K.C., of Toronto.

The Province is to be congratulated on the abundance of Deer and Moose in our northern country. Sportsmen in increasing numbers are coming to us every season from



England and the United States to enjoy the invigorating sport of hunting the antlered monarch of our forests; and with a fair amount of protection a good head of game will be assured for many years to come, and prove a source of revenue, not only to the settlers in our newly-opened-up districts, but also to the Province.

The fact that 259 non-resident licenses and 5,707 deer-hunting and 153 moose licenses were issued this season is sufficient evidence of the popularity of Ontario as a sportsman's paradise, and of the valuable asset we possess in our game.

The Canadian Express Company report having carried during the season of 1903 the large number of 2,950 carcasses of deer, and the Dominion Express Company 416, making a total of 3,366, an increase of 176 over the season of 1902. Ninety-three head of moose are reported killed by licensed hunters. These figures give but an inadequate idea of the total number killed during the season.

It is very gratifying to report that the Beaver, the most intelligent and valuable of our fur-bearing animals, is increasing in numbers in some sections of the Province. But Otter are still reported to be very scarce.

Your Commissioners beg to place themselves on record as being opposed to the use of automatic and repeating shotguns for sporting purposes. In a country where, from natural causes, our game birds are becoming scarcer year by year, the use of all such firearms should be discouraged and discountenanced by all true sportsmen.

Your Commissioners beg to express their appreciation of the highly-intelligent and painstaking manner in which the Chief Game Warden, Mr. E. Tinsley, continues to discharge the duties of his office. Through his assiduity his Department shows most gratifying increases, financially, year by year. During the year 1903 the receipts from all sources were \$19,505.82, and the expenditure \$9,308.10, leaving a net balance to the Province of \$10,197.72, being nearly \$3,000 in excess over that of last year.

All of which is respectfully submitted.

MONTAGUE A. A. SMITH,  
Chairman Ontario Game Commission.

### REPORT OF THE CHIEF GAME WARDEN.

Toronto, January, 1904.

Montague A. A. Smith, Esq., Chairman Ontario Game Commission :

Sir,—I herewith respectfully submit for the consideration of yourself and members of the Ontario Game Commission my report of the work of the Commission for the year ending December 31st, 1903. Also those of the Wardens having charge of the respective districts into which the Province has been divided for the purpose of game protection. You will, as in past years, find copies of orders in Council and the usual statistics, with resume of the increased work of the Commission, and the satisfactory results, which, I venture to hope, will have the approval of yourself and colleagues.

Wardens.

In former reports I felt it my duty to draw to the attention of the Commission that wardens in charge of the several districts are only expected to devote a portion of their time to the work of the Commission, and only remunerated in accordance with such arrangements. This system of paying the wardens was no doubt justified, while the work of the Commission was to some extent an experiment, and a large proportion

of the cost came from the general funds of the Province. The time has now arrived, owing to the large number of tourists who spend their summers in the northern districts of the Province, and also the opening up of new districts, equally available to tourists, lumbermen, hunters and poachers, when it is necessary for the protection of our large game and partridge, that the wardens should devote their whole time to the increased work of the Commission, and remunerated accordingly. In recommending this I do so, feeling sure the increased cost in salaries would be fully repaid from the more effective work they would be able to perform, and our large game, which is becoming such a factor in the tourist business, would be more effectively protected. As in past years, I have received most valuable assistance from the Inspectors and Provincial officers of the Attorney-General's Department, and also from the Rangers, Crown Land Agents, and other employees of the Department of Crown Lands. In my last year's report I took the liberty of drawing your attention to the urgent necessity of having two more salaried wardens appointed for the Nipissing and Algoma districts, in consequence of the influx of settlers, miners, and others in these remote districts, and that I had reason to believe that much illegal killing of large game occurred in those districts, beyond the reach of our present staff of wardens. The necessity for these appointments is still urgent.

#### Deputy Wardens.

Thirty-eight deputy wardens have been appointed during the year, the number on the list being 320. Most of these appointments have been made in the northern districts, where most required. As a rule, most of them have discharged their respective duties effectively.

#### Game Laws.

From the reports of wardens, deputy wardens, and those on special service during the open season for moose, caribou and deer, I am glad to be able to report that the game laws have been fairly well observed, with some exceptions. So far I have endeavored to make the work of the Commission of an educational character, realizing the great difficulty of making the people of the Province conversant with the game laws. During the last eight years some thirty thousand copies of the game laws have been distributed, also a large number of posters, circulars, etc. Therefore, the usual plea of ignorance of the laws should no longer be received or tolerated as an excuse for avoiding the punishment of wrongdoing. Those who, knowingly and wilfully, violate the game laws for the sake of gain, such as storekeepers and fur dealers, commission firms and those in charge of lumber camps, should be fined to the fullest extent the law provides. I am fully convinced that the time is not far distant when it will be necessary to collect a small license fee in the Province for the right to kill any species of game, to ensure its better protection during both open and close seasons. This would have the effect of stopping country storekeepers employing boys to shoot partridge for export from the Province. It would also enable us to have more effective espionage in the back country where the practice prevails. It would also provide funds for cost of same, and prevent many accidents that result from guns in the hands of careless boys. Such action would have the approval of sportsmen in general and the public at large. The continued abuse of the privileges accorded tourists visiting the Province, by many of them, would justify measures being taken prohibiting firearms of any description being in possession of tourists or guides in the northern parts of the Province during the close seasons for game. Guides should be compelled to procure licenses, and not left optional with them, as at present.

## Game in Ontario.

Ducks have in many places been very numerous during the past open season, but on the whole shooters have not been as successful as in other seasons when ducks were less numerous. The fine weather prevailing during the greater part of the open season enabled the ducks to stay in the open waters during the day, returning to the marshes late at night, and leaving for the open waters at daybreak, where they were comparatively safe, owing to the difficulty of approaching them in open waters. From all quarters I have gratifying reports of the increasing number of canvas-backs visiting the waters of the Province.

Ruffed Grouse, or Partridge have been reported more scarce than usual in most localities, even in the northern portions of the Province, where usually most abundant. Unfavorable breeding season in most parts of the Province was no doubt the principal factor in the shortage, although other causes had considerable effect, viz., the destructive latitude allowed Indians. In the middle of January last I personally seized three large trunks containing more than four hundred partridges, mostly killed by Indians and sold or traded to a storekeeper at Spanish. It is easy to realize the effect of such slaughter on the ensuing breeding season in that vicinity.

Quail I regret having again to report so unfavorably regarding these grand little game birds, that have for many years afforded the genuine sportsman in the south and western parts of the Province more sport than all other species of feathered game. The unusually wet and cold weather prevailing during the breeding season of 1902 had a most disastrous effect on these birds in the low land in the Counties of Essex, Kent and Lambton, thousands of acres being flooded, destroying nests and young birds, in some localities nearly exterminating them. On the higher lands in southern counties they are to be found in sufficient numbers to afford fairly good sport. An effort will be made to re-stock the western grounds.

Snipe afforded better sport than for years past, doubtless owing to the high water confining them to smaller areas.

Woodcock are found in less numbers each succeeding season, this arising from two causes, viz.:—unrestricted shooting in their winter home in the Southern States and the destruction of their breeding grounds in the older settled portions of the Province.

Deer.

The Canadian Express Company carried during the open season of 1903 2,950 carcasses, an increase of 664 over season of 1902. The Dominion Express Company carried 416 during the open season of 1903, an increase of 176 over season of 1902, making a total of 3,366, as against 2,501 carried by both companies in 1902. Not one-half of the licensed hunters have their deer carried by express, and none of those hunting with settlers' permits. Allowing the low average of one deer to each hunter holding licenses or permits, it is safe to say that not less than 10,000 deer were killed during the fifteen days of the open season. Not less than three or four thousand deer are annually killed by Indians and settlers in unorganized districts, who are allowed to kill game during the whole year for their own use. I have no doubt that from all sources 15,000 deer were killed in the Province last year. These, at the low price of \$10.00 each, would amount to \$150,000. Forty moose, or portions of same, were carried by the Dominion Express Company during the open season. The heads of fifty-three were taken as baggage on trains, by hunters, who left the carcasses for their guides. This, making a total of ninety-three killed by licensed hunters. No doubt



twice this number were killed by Indians and settlers, of which it is impossible to obtain any record. It is safe to assume that the value of all species of game killed in the Province in 1903 is not less than \$200,000, exclusive of fur-bearing animals.

#### Fur-bearing Animals.

I have reports to the effect that a marked increase in the number of beaver is noticed in sections of the Province not infested by Indians. No marked increase of otter is reported. There is a general desire of those engaged in the fur business that mink should be protected. They state that not more than 10 per cent. of the skins obtained in the Province are first-class, many of them being killed when half grown, or killed during the summer, when the fur is of little use. Fur dealers state that a first-class mink skin will realize as much as the average beaver.

#### Muskrats.

These animals appear to be holding their own with a tenacity only equalled by the German carp.

#### Insectivorous Birds.

Fifty-three permits to take insectivorous birds have been issued, a slight increase over last year.

#### Shooting Licenses.

Two hundred and fifty-nine non-resident licenses have been issued, and five thousand seven hundred and seven deer-hunting licenses, also one hundred and fifty-three moose licenses, and the usual number of settler's permits.

It is my pleasant duty to again tender my warmest thanks to the various railroad and express companies' officials, the press and sportsmen in general, for the uniform courtesy and assistance so kindly accorded me.

All of which is respectfully submitted, by

Your obedient servant.

E. TINSLEY,  
Chief Game Warden.

Belleville, 31st December, 1903.

E. Tinsley, Esq., Chief Warden :

Sir,—Herewith I beg to submit my annual report of the condition of game in this eastern district, over which I have supervision.

Deer have been found quite numerous in many localities, and, considering the number killed each year, the supply in evidence is, I think, remarkable, and, notwithstanding that there was no falling off, but rather an increase in the number taken during the last open season, I am of the opinion that it is impossible this can go on from year to year without leading to disastrous results.

Moose have been frequently seen much further south than of late years, but whether this can be taken as an indication of their increasing numbers, or that they have been disturbed in their haunts further north, is hard to determine; but, considering that the numbers taken in the hunting season is comparatively small, I incline to the belief that they are increasing satisfactorily.

Ducks have been fairly plentiful in most of the marshes during the fall, but the early shooting was not very good.

Partridge, I regret to say, were unusually scarce during the past season. for what reason I am unable to say.

Fur-bearing animals are much in the same condition as in former years, muskrats being fairly numerous, while beaver and otter are showing no apparent increase.

The laws, on the whole, have been very well observed by the sporting fraternity, but many of the settlers have very little conception of their duty as citizens, so far as the observation of the game laws is concerned.

In conclusion, I would respectfully recommend that the clause relating to settlers in unorganized townships or territories should be amended, so as to put them on the same footing as their neighbors who happen to live in a township which is organized.

I have the honor to be, sir,

Your obedient servant,

H. K. SMITH,  
Warden.

Beaumaris, December. 1903.

E. Tinsley, Esq., Chief Game Warden, Toronto :

Sir,—Herewith I beg to submit my annual report in regard to game in those districts over which I have supervision.

Deer in most sections have been reported plentiful, and, judging from the number secured by hunters, it would appear that they are holding their own. We must not, however, overlook the fact that hunters are going further back, year by year, and opening up new hunting grounds, which in the natural course of events will in a few years become partially depleted. I would respectfully suggest that when certain counties or districts show a serious scarcity, such territories should be closed to hunters for a term of years. The does, fawns and small deer generally were the class procured, with few exceptions, on old hunting grounds this fall.

The deplorable number of fatalities and accidents arising from carelessness on the part of some hunters, and a preventative for such in the future requires most careful consideration. I believe a common, nominal, fair license would meet the exigencies of the case to a great extent. The issuance of these could be refused to boys under a certain age, as also to persons who for good reasons it would be wise to withhold them.

In the present act no time after the close of the season is allowed for the removal of deer, whereas formerly several days were allowed. I would strongly recommend that a change should be made in the old laws. Really speaking, all the railway, express and steamboat companies were breaking the law in handling venison this fall; as they were doing this in ignorance and in good faith, I did not take any notice of it, as it was absurd to think of all the hunters being compelled to take out affidavits. I am pleased to report that very few infractions occurred during the open season. The hunters who come up north are a fine class of men, and deserve all the courtesy we can give them, and they, I am sure, in their turn, will give us all the assistance in their power.

I would also respectfully suggest that abstracts from the Act should be printed on large sheets of cardboard, and a copy be sent to each railway station and postoffice in the Province, to be posted up. If we want the laws observed, it is our plain duty to use every means to instruct the public in such laws, and I think the above suggestion would be the most likely way to reach the masses.

I would also suggest that, should any alteration be made in the Act during the approaching session of the Legislature, that Section 32, relating to Indians and settlers in unorganized townships, etc., be entirely expunged. At any rate, on all territory south of the main line of the Canadian Pacific Railway.

Moose hunters have been fairly successful, several fine specimens having been taken.

## LIST OF DEPUTY WARDENS BY COUNTIES.

## Algoma.

Allard, John, Sault Ste. Marie.  
 Black, Andrew, Richard's Landing.  
 Burrows, George, Wharncliffe.  
 Clarke, R. H. Hymers.  
 Curran, Thomas J., Murilo.  
 Emmons, Maurice, Rat Portage.  
 Green, Thomas, Beaver Mills.  
 Harris, W. J., jr., Day Mills.  
 Howey, C. T., Fort Frances.  
 Kennelly, Daniel, Fort William West.  
 Kydd, George, Elmo.  
 Morton, E. A., Fort William.  
 McKewen, S. R., Tehkummah.  
 McKirdy, William, Nepigon.  
 Norquay, Thomas, Manitowaning.  
 Piper, Thomas, Slate River.  
 Reid, Alexander, Murillo.  
 Rowan, William, Thompsonson.  
 Rush, Robert, Echo Bay.  
 Sim, John, Barwick.  
 Tripp, E. C., Atikokan.  
 Whalen, James, Port Arthur.

## Addington.

Clancey, C. E., Enterprise.

## Bruce.

Amos, William, Dyer's Bay.  
 Armstrong, Joseph, Kinloss.  
 Henderson, James, Kincardine.  
 Hogg, George, Paisley.  
 Hogg, W. W., Paisley.  
 McDonald, Donald, Ripley.  
 McFarlane, D., Red Bay.  
 McIver, John, McIver.  
 Pratt, John, Kincardine.  
 Richards, C. A., Tara.

## Brant.

Montgoinery, C. A., Brantford.  
 Telfer, W., Paris.

## Carleton.

Cleland, C. T., Osgoode Station.  
 Loveday, E. T., Ottawa.  
 Milford, Robert, Carp.  
 Taylor, A. H., Ottawa.

## Dufferin.

Hubard, J. J., Orangeville.  
 Skelding, J. A., Shelburne.

## Dundas.

Barelay, J. C. W., Inkerman.  
 Cameron, Lachlin, Iroquois.

## Durham.

Hammond, Archibald, Orono.  
 Jackson, T. W., Orono.

## Elgin.

Chute, E. A., Lakeview.  
 Davoe, William, Avon.  
 Fairbrother, W. T., St. Thomas.  
 Fowler, Jacob, Fingal.  
 Hopkins, John, St. Thomas.  
 Huffman, J. M., Aylmer.  
 Miller, Robert, Lawrence Station.

## Essex.

Banks, Anthony, Harrow.  
 Cornette, C. F., Belle River.  
 Gignac, Louis, Gordon.  
 Hugill, William, Staples.  
 Ives, Arthur, Leamington.  
 King, George, Ruthven.  
 Lindsay, William, Comber.  
 Price, J. E., Pike Creek.  
 White, J. H., Pelee Island.

## Frontenac.

Brickwood, J. H., Kingston.  
 Dowker, William, Harrowsmith.  
 Gates, George, Westbrook.  
 Woodman, W. G., Allen.  
 Walker, Nelson, Cataraqui.

## Grey.

Campbell, Malcolm, Hanover.  
 Carson, James, Durham.  
 Leader, Alfred, Meaford.  
 McKnight, Thomas, Dornoch.  
 Munshaw, Peter, Eugenia.  
 Myers, James, Orchard.  
 Seigmann, Louis, Neustadt.  
 Simmons, M. H., Oxenden.  
 Tedford, James, Dundalk.  
 Weber, John, Vandeleur.

## Glengarry.

Clark, James, Dominionville.  
 Dickson, D. A., Williamstown.  
 Dunn, Ambrose, South Lancaster.  
 Raymond, Israel, Bainsville.

## Grenville.

Dunlop, Thomas, Groveton.

## Hastings.

Foster, Alexander, Egan Creek.  
 Hubbell, B. C., Marmora.  
 Reid, George, Madoc.  
 Unwin, Walker, Bannockburn.

## Halton.

Crawford, Murray, Campbellville.  
 Panton, William, Milton.  
 Raeey, C. S., Milton.

## Haldimand.

Farrell, John, Cayuga.  
 Thompson, Wellington, Port Maitland.



## LIST OF DEPUTY WARDENS BY COUNTIES.—Continued.

## Haliburton.

Ashbaugh, George A., Dorset.

## Huron.

Anderson, J. A., Seaforth.

Crech, James, Exeter.

Currie, John, Goderich.

Gill, John, Exeter.

Hewitt, John, Brussels.

McKay, Peter, Chiselhurst.

Naftal, C. J. S., Goderich.

Rider, Joseph, Clinton.

Sands, John, Saltford.

Scott, Alexander, Westfield.

## Kent.

Boles, T. Gordon D., Chatham.

Causgrave, Michael, Selton.

Dagneau, David, Chatham.

Dewar, R. G., Mitchell's Bay.

Eberts, G., Chatham.

Fisher, Byron, Wallaceburg.

Gardiner, Herbert, Morpeth.

Johnston, W. J., Chatham.

Kime, George, Big Point.

MacGregor, J. D., Chatham.

Smith, W. T., Tilbury.

Southgate, R. M., Wallaceburg.

## Lambton.

Chambers, Thomas, Muir's Landing.

Hales, Hiram, Bridgen.

Kennedy, Joseph, Port Lambton.

Meyers, S. H., Port Lambton.

Morris, T. P., Warwick.

Sarvis, A. E., Sarnia.

Taylor, J. P., Watford.

Witty, George H., Wyoming.

## Lennox.

Huff, Hiram W., Napanee.

## Lincoln.

Kemp, Wm. E., Beamsville.

Kennedy, C. A., Smithville.

McPherson, James, St. Ann's.

Randall, W. L., Grimsby.

Rayner, John, Niagara.

## Lanark.

Farnall, William, Smith's Falls.

Finlayson, William, Harper.

Gardner, W., McDonald's Corners.

Mair, David, Lanark.

Manhard, H. S., Smith's Falls.

Patterson, J. E., Christy's Lake.

## Leeds.

Bilton, George, Newboro.

Brown, Harry, Gananoque.

Gibson, John R., Mallorytown.

Griffin, William, Sand Bay.

Mathen, Henry, Brockville.

Murchie, Robert, Gananoque.

Smith, Justus B., Charleston.

## Middlesex.

Fiffield, William A., Putnam.

Forman, J. J., Dorchester Station.

Gibson, John W., Strathroy.

Jury, Robert E., London.

Paisley, Leonard, Ilderton.

Sadler, William, London.

Monck.

Moore, D. N., Perry Station.

## Muskoka.

Armstrong, J. A., Morrison's Lake.

Berry, William, Walker's Point.

Brooks, Edgar J., Huntsville.

Butler, C. T., Point Kaye.

Draycott, F. W., Aspdin.

Grenke, Gustav, Rosseau.

Laforge, Peter, Muskoka Mills.

McFadyen, A., Huntsville.

Owens, David, Mortimer's Point.

Smith, J. D., Morrison Lake.

Stevens, George, Shannon Hall.

Strombery, Nils, Torrance.

Thornton, Richard, Huntsville.

Traves, John, Fraserburg.

Walker, James, Huntsville.

Weir, James, Utterson.

## Norfolk.

Dowswell, John, Lynedoch.

Ewing, A. R., Waterford.

Kramer, Conrad, Delhi.

Lambert, P. N., Simcoe.

## Northumberland.

Cock, Louis, Campbellford.

Diamond, Thomas, Cobourg.

Field, Cyrus W., Cobourg.

Merrian, H. N., Harwood.

Potts, George S., Campbellford.

Terrill, Esli, Wcoier.

## Nipissing.

Armstrong, W. G., New Liskeard.

Cahill, Thomas, jr., North Bay.

Commanda, Alex., Sturgeon Falls.

Fraser, W. A., Mattawa.

Harpe, William, Markstay.

Huntington, S. A., North Bay.

Sodoin, Louis, Sturgeon Falls.

Maloney, Theophile, Sudbury.

Shortt, David, New Liskeard.

## Ontario.

Donovan, Timothy, Longford Mills.

Ferguson, Edward, Cannington.

Frankish, F. M., Uxbridge.

Goodman, C. H., Cedardale.

Miller, Arthur, Seagrave.

Pettet, George W., Port Perry.

Schell, Samuel, Port Perry.

Steele, John, Uptergrove.

Stoner, George, Pickering.

Sutcliff, James, Prince Albert.

Whan, Frank, Longford Mills.

## LIST OF DEPUTY WARDENS BY COUNTIES.—Concluded.

## Oxford.

Almas, A., Folders's Corners.  
Hill, F. S., Woodstock.  
Huntingford, Henry, Woodstock.  
Thornton, J. B., Woodstock.  
Watters, William, Drumbo.

## Parry Sound.

Blea, Daniel, Uplands.  
Cummins, M. J., Sand Lake.  
LaBrash, J. P., Maple Island.  
LaBrash, W. E., Maple Island.  
McAmmond, William, Dunchurch.  
McDonald, A., Sundridge.  
McGhie, Robert, Whitestone.  
McRory, John, Stauratt.  
Mitchell, Robert, Cecebe.  
Russell, John F., Loring.  
Welch, C. H., Sundridge.  
Wright, H. C., Powassan.

## Peterboro'.

Moore, D. H., Keene.  
Moore, F. J., Lakefield.  
Nichols, Thomas, Hall's Bridge.

## Prescott.

Barrett, John, Fournier.  
Cross, A. J., Vankleek Hill.  
Gordon, Samuel, Riceville.  
Lefavre, Hercules, Lefavre.  
LeRoy, Ralph, Vankleek Hill.

## Prince Edward.

Lake, Stephen, Westlake.  
Sprague, G. G., Demorestville.

## Peel.

Rayburn, John, Caledon.

## Perth.

Climie, William, Listowel.

## Renfrew.

Brill, William, Sand Point.  
Dunn, F. W., Barry's Bay.  
Ferneyhough, Geo., Pembroke.  
Grier, William, Eganville.  
Johnston, S. M., Arnprior.  
Kennedy, John, Pembroke.  
Stewart, Alex., Sand Point.  
Yuill, Walter, Calabogie.

## Russell.

Casselman, Charles A., Casselman.  
Longtin, Nap., The Brook.  
Stewart, Peter, South Indian.

## Simcoe.

Coombs, John, Lovering.  
Crawford, Andrew, Penetang.  
Doner, J. B., Creemore.  
Hines, John, Barrie.  
Hogg, George, Barrie.  
Howard, Patrick, Collingwood.  
Kean, Boulton R., Orillia.  
King, John, jr., Penetang.  
Loudon, H. J., Penetang.  
McFarlane, D., Midland.  
Powell, John, Sebright.

Pratt, William, Penetang.  
Primrose, Alex., Apto.  
Ronald, A., jr., Minesing.  
Ross, Joseph, Cookstown.  
Regan, John, Orillia.  
Shields, A. W., Angus.  
Somerville, D., Jack's Lake.  
Wilson, Newton, New Lowell.

## Victoria.

Bryan, Benjamin, Lindsay.  
Campbell, John, Ragged Rapids.  
Junkin, W. T., Fenelon Falls.  
Robinson, Alexander, Kirkfield.

## Welland.

Cook, B. A., Niagara Falls.  
Effrick, R. M., Fenwick.  
Griffin, Richard, Fort Erie.  
Michener, C., Ridgeway.  
Neff, Peter, Marshville.  
Nixon, J. C., Welland.

## Wentworth.

Dilts, William W., Attercliffe.  
Graham, Harry, Hamilton.  
Hazell, John, Hamilton Beach.  
Morden, Eli L., Greensville.

## Waterloo.

Colvin, A. J., Galt.  
Fraser, Alex., New Hamburg.  
Gress, Philip, Blair.  
Hall, James, Hawksville.  
Hartung, Karl, Berlin.  
Lunn, John, Galt.  
Menger, William, St. Jacob's.  
McMaster, Thomas, Hespeler.  
McVittie, John, Ayr.  
Stark, John, Hespeler.  
Whitehead, H. M., Berlin.

## Wellington.

Barber, R. H., Guelph.  
Gourlay, Thos., Damascus.  
Hanson, John, Damascus.  
Howes, Alonzo, Damascus.  
Ireland, Dr. J. T., Harrison.  
Landonie, Louis, Dracon.  
Maitland, John D., Elora.  
McCulloch, W. H., Fergus.  
McCullough, John, Gordonville.  
Palmer, E. T., Guelph.  
Robertson, Colin, Hillsburg.  
Stewart, Donald, Crieft.  
Smith, George, Eden Mills.  
Warden, Richard, Erin.

## York.

Rout, J. H., Holland Landing.  
Tidsberry, J. L., Coleman.

## Quebec.

Crowley, E. B., Montreal.  
Finnie, Dr. J. T., Coleman.

These men have been especially appointed to enforce the game laws on Lake St. Francis, which is partly in Ontario and partly in Quebec.

## REPORT ON CASES

County or District.	Name of prosecutor.	Date, 1902.	Name of offender.	Address.	Offence charged.
Carleton.....	E. T. Loveday .....	Jan.	4 Timothy Boland.....	Ottawa .....	Offering hares for sale...
	do .....	do	4 Wm. Goodman.....	do .....	do
	do .....	do	16 G. F. Johnson.....	do .....	Offering partridge for sale.
	do .....	Aug.	17 M. Berry.....	do .....	Shooting on Sunday....
	do .....	Sep.	16 Max Viau.....	do .....	Hunt ducks, close sea...
	do .....	do	16 Wm. Henry.....	do .....	do
	do .....	Dec.	23 G. F. Johnson.....	do .....	Offering ducks for sale...
Essex.....	James H. White .....	Sep.	1 Charles Brown.....	Cleveland, O.....	Shoot quail, other game.
	do .....	Nov.	5 Herbert Walters .....	Sandusky, O.....	Shoot, without license...
	F. C. Quallins .....	Feb.	22 Wm. Pierce.....	Marine City.....	do
	do .....	do	22 David Foster .....	do .....	do
	do .....	do	22 George Foster .....	do .....	do
	do .....	do	22 Andrew Francis.....	do .....	do
	do .....	Apl.	28 Henry Julian.....	Colchester, So.....	Trapping geese.....
	do .....	June	6 James Chauvette.....	Anderton.....	Shoot Eng. pheasants...
	do .....	Sep.	28 John Paxton .....	Detroit.....	Shooting on Sunday....
	do .....	Oct.	7 James Fryer .....	Stone Quarry.....	do
	do .....	do	7 Bert Leslie .....	do .....	do
	do .....	do	7 John Leslie.....	do .....	do
Frontenac.....	J. H. Brickwood .....	June	4 .....	.....	.....
	do .....	Oct.	20 .....	.....	.....
Hastings.....	H. K. Smith .....	Jan.	8 John Bartley .....	Moore's Falls....	Hunting deer, close season.
	do .....	do	8 Ben Bartley .....	do .....	do
	do .....	do	8 W. Bartley.....	do .....	do
	do .....	do	8 Thos. Spencer .....	do .....	do
	do .....	do	10 Job Palmer .....	Fenelon Falls .....	Hunt, without license...
	do .....	do	10 John Palmer.....	do .....	do
	do .....	Feb.	21 M. McGarvey.....	Marmora .....	Hunt, deer, close season.
	do .....	do	25 E. Hubble.....	Havelock .....	Selling partridge .....
	do .....	Mar.	6 Jno. Paplinski.....	Barry's Bay .....	Hunt, deer, close season.
	do .....	do	6 — Paplinski.....	do .....	do
	do .....	do	25 D. McRae.....	Uphill .....	Kill, deer, close season.
	do .....	do	25 Hugh Wyllie.....	do .....	do
	do .....	do	25 James Suter .....	do .....	Having beaver in pos. ...
	do .....	do	25 George Suter.....	do .....	Hunt, deer, close season.
	do .....	Apl.	9 Vair & McDougall.....	Owen Sound .....	do
	do .....	do	16 E. Van Volkenburgh..	McLean .....	Buying & sell, partridge.
	do .....	do	16 S. do .....	do .....	Selling partridge .....
	do .....	do	16 J. do .....	do .....	do
	do .....	do	16 H. do .....	do .....	do
	do .....	do	16 Miles Sills .....	do .....	do
	do .....	do	16 Harvey Wood .....	do .....	do
	do .....	do	16 Wm. Arney .....	do .....	do
	do .....	do	16 David Kirk .....	do .....	do
	do .....	do	24 Lewis Whalen .....	Enterprise .....	Buying & sell, partridge.
	do .....	Sep.	5 Percy Parsons .....	Omeme .....	Shooting ducks.....
	do .....	do	18 Wm. Adrain .....	Bancroft.....	Having venison .....
	do .....	Oct.	21 Geo. Griffin .....	Omeme .....	Shoot, rail, close season.
	do .....	do	21 Geo. English.....	do .....	“ plover ”
	do .....	Dec.	16 H. Dover .....	Egansville.....	Shipping partridge.....
	do .....	do	17 Sausack Bros.....	Wilno .....	do
	do .....	do	17 J. Delane .....	do .....	do
	Walker Unwin .....	Feb.	12 G. Sandford .....	Brighton .....	Buying deer skins out of season.
	do .....	do	12 Geo. Laird .....	Tudor .....	Catching beaver .....
	do .....	Dec.	19 B. Wheeler.....	Bogart .....	Having fresh deer in possession.
Huron .....	J. H. Armstrong .....	Jan.	20 R. Henderson .....	Kincardine.....	Shooting partridge .....
	Jas. Henderson.....	Nov.	5 A. Ingram .....	do .....	Killing deer without license.
Lanark .....	David Mair.....	Oct.	23 M. Jackson.....	Folger Station ..	Trap, rats out of season..



## FOR YEAR 1902.

Arrested, or summoned.	Where tried.	Name of Magistrate.	Result of case.	Firearms, traps, etc., seized dur- ing year.
Appeared.....	Ottawa .....	O'Keefe .....	Fined \$5 and cost .....	Seized 1 gun, 5 nets, 4 night lines, 20 boxes or bags of partridge, about 2,000 rat skins, 3 beaver and 1 otter skin.
do .....	do .....	do .....	do 5 do	
Summoned ...	do .....	do .....	do 5 do	
do .....	do .....	Smillie .....	do 5 do	
do .....	do .....	do .....	Dismissed.	
do .....	do .....	do .....	do	
do .....	do .....	O'Keefe .....	Fined \$5 and costs.	
Got away be- fore arrest could be made.				
Summoned ...	Sombra .....	Baring & Meyers .....	Fined \$5 and costs.	
do .....	do .....	do .....	do 5 do	
do .....	do .....	do .....	do 5 do	Seized 1 barrel of bass being ship- ped by Americans. Seized 25 rat traps in Big Bay.
do .....	do .....	do .....	do 5 do	
do .....	do .....	do .....	do 5 do	
do .....	Harrow .....	James Brown .....	do 9.50 do	
do .....	Amherstburg..	Mr. McGee .....	do 5 do	
do .....	Windsor .....	Mr. Bartlett .....	do 8.50 do	
do .....	Amherstburg..	Mr. McGee .....	do 2 do	
do .....	do .....	do .....	do 2 do	
do .....	do .....	do .....	do 2 do	
do .....	do .....	do .....	do 2 de	
do .....	do .....	do .....	do 2 de	
do .....	do .....	do .....	do 2 de	
do .....	do .....	do .....	do 2 de	
do .....	do .....	do .....	do 2 de	
do .....	do .....	do .....	do 2 de	
do .....	Minden .....	Wm. Fielding .....	Dismissed.	Seized a quantity of beaver and otter.
do .....	do .....	do .....	do	
do .....	do .....	do .....	do	
do .....	do .....	do .....	do	
do .....	Fenelon Falls.	Jas. Dickson .....	Fined \$20.	
do .....	do .....	do .....	do 20.	
do .....	Marmora .....	B. C. Hubbell .....	Dismissed.	
do .....	Havelock .....	Geo. Edmison .....	Fined \$5.	
do .....	Barry's Bay ...	F. W. Dunn .....	Dismissed.	
do .....	do .....	do .....	do	
Settled .....	do .....	H. K. Smith .....	Fined \$20.	
do .....	do .....	do .....	do 20.	
do .....	do .....	do .....	do 50.	
do .....	do .....	do .....	do 50.	
do .....	do .....	do .....	do 50.	
Settled .....	do .....	do .....	Fined \$15.	Confiscated 21 boxes of partridge, at sundry times and places; also 2 otter skins.
do .....	do .....	do .....	do 5.	
do .....	do .....	do .....	do 5.	
do .....	do .....	do .....	do 5.	
do .....	do .....	do .....	do 5.	
do .....	do .....	do .....	do 5.	
do .....	do .....	do .....	do 5.	
do .....	do .....	do .....	do 15.	
do .....	do .....	do .....	do 10.	
do .....	do .....	do .....	do 20.	
do .....	do .....	do .....	do 5.	
do .....	do .....	do .....	do 5.	
do .....	do .....	do .....	do 5.	
do .....	do .....	do .....	do 5.	
do .....	do .....	do .....	do 5.	
Summoned ...	Eganville .....	J. McCann .....	do 22.	Sentence suspended.
Appeared .....	do .....	H. K. Smith .....	do 20.	
do .....	do .....	do .....	do 20.	
Summoned .....	Millbridge .....	do .....	do 20.	
do .....	do .....	do .....	do 20.	
Appeared .....	Madoc .....	L. O'Hara .....	do 20.	Seized a few skins, and sent them to Department.
do .....	do .....	do .....	do 20.	
do .....	do .....	do .....	do 20.	
do .....	do .....	do .....	do 20.	
do .....	do .....	do .....	do 20.	
Arrested .....	Lanark .....	Mr. McLean .....	do 10 and costs...	
Summoned .....	Kincardine .....	Joseph Baker .....	do 10 do	
do .....	do .....	W. J. Henry .....	do 20 do	

## REPORT OF CASES

County or District.	Name of prosecutor.	Date 1902.	Name of offender.	Address.	Offence charged.
Muskoka ....	J. H. Willmott .....	Jan. 28	B. Merns .....	Trout Creek .....	Possession of venison....
	do .....	do 29	A. Lemay .....	Gravenhurst .....	Hunting out of season...
	do .....	do 29	D. Lemay .....	do .....	do .....
	do .....	do 31	J. Jones .....	Parry Sound .....	do .....
	do .....	Feb. 3	J. Montgomery .....	Burpee .....	Selling venison.....
	do .....	do 3	A. Collison .....	do .....	do .....
	do .....	do 19	G. French .....	Trout Creek .....	Shooting partridge in close season.
	do .....	do 19	J. French .....	do .....	Hunting out of season ..
	do .....	Sep. 20	— Piper .....	Baltimore .....	Shooting without license
	do .....	Oct. 25	J. C. Bogart .....	Ufford .....	Killing deer out of season.
	A. McFayden.....	Mar. 4	J. Yaffe.....	Toronto .....	Possession of beaver skins.
	Jas. Weir .....	Nov. 9 and 10.			
Nipissing ....	Theophile Maloney ...	Aug. 26	Isadore Bourassa .....	Sudbury .....	Possession of venison....
Oxford .....	A. Almas .....	Mar. 20	Lorne Sage.....	Ingersoll .....	Killing grey squirrels in close season.
	do .....	do 20	D. McCulick .....	Woodstock .....	Hunting in close season. do
	do .....	do 20	Geo. Thornton .....	Sweaburgh .....	
Parry Sound.	Jno. F. Russell .....	Nov. 9	Jas. Morris .....	Ottawa .....	Shooting partridge on Sunday.
	J. P. LaBrash.....	Jan. 20	A. McCallum.....	Dunchurch.....	Using venison in his camp.
	do .....	Feb. 15	John Bruce.....	Unknown .....	Having two deer skins in possession.
	do .....	July 20	Wm. Doolittle .....	Severn Bridge ..	Hunting ducks.....
	do .....	Aug. 8	Mr. Grouse.....	Unknown .....	do .....
	do .....	do 8	A. Ainsley .....	Whitestone .....	do .....
	do .....	do 8	E. Tracey .....	do .....	do .....
	W. E. LaBrush .....	do 12	J. Smith .....	Unknown .....	do .....
	do .....	Sep. 10	H. Lennox .....	Nipissing .....	Shooting partridge....
Rainy River.	Maurice Emmons ...	July 14	C. Dahm .....	Rat Portage ....	Possession of otter skins.
	do .....	Oct. 21	Paul Simmons .....	Whitefish Bay ..	do rat skins...
Renfrew ....	F. W. Dunn .....	Nov. 4	Eli Ferguson .....	Barry's Bay ....	do otter skins.
	do .....	do 4	Antoine Aroone .....	do .....	do do
	J. C. Kennedy .....		F. Jervis .....	Warren .....	Killing deer .....
Waterloo ....	Karl Hartung .....	Mar. 25	Joseph Zuber.....	Montrose .....	Shooting white owl ....
	do .....	do 29	George Reist .....	Conestoga .....	do .....

FOR YEAR 1902.—*Concluded.*

Arrested or summoned.	Where tried.	Name of Magistrate.	Result of case.	Firearms, traps, etc., seized during the year.
Summoned....	Trout Creek...	J. H. Willmott.....	Fined \$20.	
do ....	Gravenhurst...	Johns & Willmott.....	do 20.	
do ....	do .....	do .....	do 20.	
Settled .....	.....	J. H. Willmott.....	do 20.	
Summoned....	Parry Sound ..	Farrer & Willmott.....	Dismissed.	
do ....	do .....	do .....	do .....	
do ....	Trout Creek...	J. H. Willmott.....	do .....	
do ....	do .....	do .....	do .....	
do ....	Rosseau .....	do .....	Fined \$20.	
Settled .....	.....	.....	do 20.	
Summoned....	Huntsville.....	Geo. Hutcheson.....	do 140 and costs.	
.....	.....	.....	.....	Seized 18 rat, 4 beaver and 4 otter traps and sunk them.
Arrested.....	Sudbury .....	T. J. Ryan.....	Fined \$10 and costs.	
Summoned....	Ingersoll.....	Mr. Morrison .....	Settled for \$5.61.	
do ....	do .....	do .....	Dismissed.	
do ....	do .....	do .....	do .....	
do ....	Loring.....	A. W. Sinclair.....	Settled out of court.	
do ....	Dunchurch....	Wm. Robertson .....	Fined \$20.	
Settled .....	.....	.....	do 40.	
Summoned....	Maple Island..	.....	Settled \$5.	
do ....	Ahmie Harbor.	.....	do 5.	
do ....	Whitestone ...	R. Robertson.....	Fined \$ 5.	
do ....	do .....	do .....	do 25.	
do ....	Maple Island..	J. P. LaBrash.....	do 10.	
do ....	do .....	do .....	do 10.	
do ....	Rat Portage. .	Jos. E. Rogers.....	do 20 and costs...	Confiscated otter skins.
Arrested.....	Whitefish Bay.	Wm. Young.....	do 5 do	" 350 skins.
Summoned....	Barry's Bay....	F. W. Dunn .....	do 20.	
do ....	do .....	do .....	do 20.	
do ....	Warren.....	Dr. H Irwin .....	do 10 and costs.	
do ....	Berlin .....	Mr. Weir .....	do 5 do	
do ....	do .....	Mr. Mackie.....	do 6 do	





Partridges have been fairly plentiful up north, but have not increased to such an extent as the favorable breeding season would have led us to hope for and expect, further south.

The present system regarding our deputy wardens is not satisfactory. We have good men, but most of them will not prosecute, whilst their only remuneration is the fine inflicted, and which their neighbors look upon as blood money. I would suggest that men be appointed under a small salary, say even \$50 or \$75 per annum, each having charge of a certain number of townships. Also pay their expenses whilst engaged in prosecutions, but do not allow them any moiety of the fine. The public would then know that these men were paid for their work, and the men would know that if they were remiss in their duty they would be replaced by others, who would do their duty. On a recent trip out west I was much struck with the fine, gentlemanly fellows who act there as deputies. This they do for the love of sport, and woebetide any one they come across breaking the law.

Beaver, I am pleased to report, are increasing rapidly in places. It is most difficult to have the law as regards these animals respected as it should be, but on the whole I think we should be satisfied with the increase. I am sure we have every reason to congratulate ourselves with the working of the law as a whole, and as the public are becoming awake to the importance of game protection, we are constantly receiving assistance from quarters from whence, a few years ago, we would least expect to get it.

I am, sir,

Your obedient servant,

JOHN H. WILLMOTT.

Dunnville, Dec. 31st, 1903.

E. Tinsley, Esq., Chief Game Warden. Toronto :

Sir,—I have the honor to submit to you my annual report for the year 1903, relating to the southeastern district of Ontario.

Partridge in this district averaged very favorable in both quality and number, being more matured and better developed birds on an average than for the past three years.

Wild geese have been found quite numerous, or more so, than in the past few years. Quite a number have been taken by hunters who understand their habits.

Ducks have been found quite plentiful this year, and of a better quality than for many years past. It is the unanimous opinion in this district that the open season for ducks should not be earlier on any account than the fifteenth of September, as the first fifteen days of September are always too warm, and many of the ducks are not yet fully matured. Many of the poaching fraternity take advantage of the early season, and shoot everything in sight, up to the 15th, under the guise of hunting duck. There can be no doubt that if the season for all game came in on the 15th it would result in greatly increasing the chances of all getting a fair show at the same time.

Muskrats in most sections of this district are on the decrease. They are hunted continuously by a certain class of trappers, who claim the privilege given in the law of protecting public works. They should be compelled to get a written permit from the officers in charge of the works before attempting to trap them.

Quail were also more numerous than usual in many localities, and of a more matured and plump appearance than has been usual in the past few years. The shortening of the season for shooting these birds is telling greatly in their favor.

Woodcock still continue rather scarce in the central portion of this district, while

in the eastern and western portions they seem to remain about the same, or in rather diminished numbers, if anything.

Plover and Snipe have not increased in the central part of this district during the last two years. They have been found in two sections in fair numbers, but on the whole I consider they are losing ground.

Black squirrels still continue to give the rising generation of sportsmen ample practice. The grey squirrels were not so plentiful this year as last.

Insectivorous birds seem to show no increase except the thrush (Turdos), or robin, which migrated here last spring in unusual numbers, and many of the females in this vicinity raised from two to three broods and left early for the south, about the 15th of September.

Cotton or wood hare have been in fair supply, and in some localities are slightly on the increase.

Canadian or white hare are very scarce. They appear to be going fast out of existence. I think they should be put in close season for ten years, with a view of trying to preserve them from becoming extinct. I think it would be a pity to allow them to become extinct.

The game laws in this district have never been more carefully observed than during the year just past, barring a very odd one of the most daring game thieves, who failed to resist the temptation when a good chance offered, also a case now and then occurred of parties more or less ignorant of the game laws getting into trouble, but whom I found on investigating had not rightly understood the laws. To all such I duly warned and instructed them in the law.

Thanking you, sir, for your very kind and valuable assistance and advice during the past year,

I have the honor to be, sir,

Your obedient servant,

J. A. GILL,

Game Warden.

Windsor, Dec. 31st, 1903.

Edwin Tinsley, Esq., Chief Game Warden:

Dear Sir,—I have the honor of submitting to you my annual report as warden of the Western District, comprising Essex, Kent, Elgin, Lambton and Middlesex, for the year ending in 1903.

Quail and partridge shooting has not been very good this season, owing to the dry, warm weather and scarcity of birds. Quail have been scarce in Essex. Many hunters have reported the same to me. Of course, there are a few locations where birds were fairly plentiful. At St. Jochum, Ruscom River, considerable birds were killed, also Colchester, North and South, reports good shooting.

Capt. Fertaw, of the Ship Canal, St. Clair Flats (Canadian side), stated that quail were increasing very much on Squirrel Island, which is located between the Chimmatagan and the Sny Carty. The Indians there protect them from poachers.

Another important locality for quail is in Romney Township, Kent County, between the eastern part of said township and the western part of Mersea Township, along the shores of Lake Erie. The farmers are making every effort to protect the birds.



Partridge was also more scarce this fall than last. East Tilbury, Kent County, reported the best shooting of the season between Merlin and Sycamore Siding, L. E. & D. R. R.

Snie and rail were very plentiful this year along the shores of Fighting Island and Canard Flats, in the early part of the season, which afforded much sport.

#### Duck Shooting.

Duck shooting remains to be the great sport of this district. They have been very plentiful along the whole frontier between Bois Blanc Island and Kettle's Point, Lake Huron. More canvas-backs have been killed this year between the islands of the Detroit River and Antredon March than in any previous year that I know of. Ducks of all kinds have been plenty at St. Clair Flats.

Good shooting has been had, with the exception of the warm spell, which interfered for some of the "clubs" coming through Horseshoe Bay by boat, and the Bassett, ducks were too numerous to mention. There will be plenty left for another season.

#### Fur-bearing Animals.

Muskrats on the Detroit and Canard Rivers are very plentiful this year, and the trappers look for a big catch on Grassy and Fighting Islands and Turkey Creek. The yearly catch is between 1,500 and 1,600 muskrats. Several complaints have been made to me by the Amherstburg and Windsor Street Car Company, that the rats were destroying the embankment of their railroad. I gave permission to destroy them, in accordance with the game laws, which provides for such causes. Muskrat will also be plentiful on Big Creek, between Knapps and Big Island, Lake Erie. All complaints from that part regarding unlawful trapping and spearing shall receive as strict attention in the future as it has in the past.

#### American Poachers.

Poachers on the frontier between Amherstburg and Sarnia Bay show up every year, as usual, and many run chances of being caught rather than pay the license fee, as the law requires, and many make big threats in defying the law. So far I have only been shot at once in my eleven years' experience, but no harm came to me, as it was quail shot, at a considerable distance. It happened at Sandwich Springs, 1898. Three poachers were arrested this fall at Fighting Island Bay. These parties came from Wyandotte and Delray, Mich., and were fined by Police Magistrate Bartlett, Windsor. Many more arrests would be made yearly along the frontiers of Detroit River and St. Clair Flats if I had a speedier boat. Without it makes it very difficult, as arresting a man on the water is altogether different than catching poachers on land, as both streams are international waters.

#### Customs Department.

The customs department along the frontier have given me every attention to assist me in my duties. A great many Americans have went hunting in Ontario, crossing the line at Windsor via C.P.R. Some hold the opinion that game licenses should be issued to foreigners as they cross the frontiers, as it is alleged that some of these parties when they get up north buy residence licenses instead of non-residence, which no doubt would be a great saving to them. I just mention this for your consideration, as some of the custom house officers hold these views.

Yours respectfully,

Your obedient servant,

F. C. QUALLINS.

Copy of an Order in Council approved by His Honor the Lieutenant-Governor, the 17th day of June, A.D., 1903 :

Upon the recommendation of the Honorable the Commissioner of Public Works, the Committee of Council advise that Mr. William Henry Casement of Lakefield be re-appointed a member of the Ontario Game Commission, his term of office having expired on April 1st, 1903.

The Committee of Council further advise that Mr. James E. Thompson of Arnprior be appointed a member of the Ontario Game Commission, in the room and stead of Mr. William Henry Biggar, whose term of office expired on 1st April, 1903, and who is no longer a resident of the Province, said appointments to take effect from the said 1st day of April, 1903

Certified,

J. LONSDALE CAPREOL,  
Assistant Clerk Executive Council.

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Copy of an Order in Council approved by His Honor the Lieutenant-Governor on the 2nd September, 1903 :

Upon the recommendation of the Honorable the Commissioner of Public Works, the Committee of Council advise that, pursuant to the provisions of Section 18 of the Ontario Game Protection Act, the hunting, taking or killing of deer in the County of Dufferin be prohibited for a period of five years from the first day of November next.

The Committee further advise that in accordance with the provisions of sub-section 3 of Section 7 of the said Act, the hunting, taking or killing of grouse or partridge in the said County of Dufferin be prohibited for a term of three years, from the 15th day of September next.

Certified,

J. LONSDALE CAPREOL,  
Assistant Clerk Executive Council.

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Copy of an Order in Council approved by His Honor the Lieutenant-Governor, the 16th day of October, A.D. 1903:

Upon the recommendation of the Honorable the Commissioner of Public Works, the Committee of Council advise that, in accordance with the request of the Council of the Township of Luther, and with the consent of the County Council, and pursuant to the provisions of Section 18 of the Ontario Game Protection Act, the hunting, taking or killing of deer in the County of Wellington be prohibited for a period of five years from the first day of November, 1903.

Certified,

J. LONSDALE CAPREOL,  
Assistant Clerk Executive Council.

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## LIST OF ISSUERS OF DEER HUNTING LICENSES—1903.

- J. H. Willmott, Beaumaris.  
 William Kirk, Bracebridge.  
 James Sharp, Burk's Falls.  
 J. A. Johnston, Parry Sound.  
 W. H. Lawson, Park Head.  
 William Climie, Listowel.  
 J. B. McWilliams, Peterboro'.  
 J. H. Brickwood, Kingston.  
 John Nott, Port Perry.  
 William Fielding, Minden.  
 George Eady, Renfrew.  
 William Matheson, Havelock.  
 S. M. Johnston, Arnprior.  
 F. J. Moore, Lakefield.  
 A. H. Taylor, Ottawa.  
 Thomas Beasley, Hamilton.  
 A. G. Brown, Stouffville.  
 Thomas Fraser, Norwood.  
 B. O'Hara, Madoc.  
 William Prust, Haliburton.  
 J. D. Cockburn, Sturgeon Falls.  
 W. A. Quibell, Sault Ste. Marie.  
 J. J. Bampffield, Niagara Falls.  
 H. T. Burton, Powassan.  
 J. T. Robinson, Bobcaygeon.  
 B. J. Gilligan, Mattawa.  
 Col. T. H. Lloyd, Newmarket.  
 T. G. Eastland, Apsley.  
 W. A. Field, Lanark.  
 Austin Moran, Dacre.  
 Peter Munshaw, Eugenia.  
 Fred. Long, Kolapore.  
 F. C. Quallins, Windsor.  
 E. Musgrove, Kirkfield.  
 W. J. Leatherdale, Coldwater.  
 J. D. Rowe, Trenton.  
 John H. Ramer, Markham.  
 Stephen Lake, Westlake.  
 B. C. Hubbell, Marmora.  
 H. W. Huff, Napanee.  
 Marshall Maybee, Madoc.  
 James Cleak, Bancroft.  
 Charles Hart, Barrie.  
 F. J. Stewart, Stayner.  
 Benj. Bryan, Lindsay.  
 A. D. Carley, King.  
 A. R. Ewing, Waterford.  
 J. Y. Hammond, St. Thomas.  
 George Packham, Alliston.  
 James McLeod, Almonte.  
 Esli Terrill, Wooler.  
 Henry Mathen, Brockville.  
 J. F. Gillespie, Picton.  
 D. Woodward, Cannington.  
 D. McMillan, Beaverton.  
 J. E. Gould, Uxbridge.  
 Chas. Leach, Millbrook.  
 E. J. Breen, Uxbridge.  
 H. B. Harrison, Owen Sound.  
 Henry Taylor, Perth.  
 O. Bascom, Kemptville.  
 John Wright, Flesherton.  
 N. D. McCallum, Carleton Place.  
 A. E. Sarvis, Sarnia.  
 James Martin, Hillsdale.  
 David Williams, Gooderham.  
 John Hill, Bradford.  
 D. McFarlane, Red Bay.  
 A. H. Brandon, Kinmount.  
 James Scott, Gooderham.  
 H. K. Smith, Belleville.  
 R. Kimber Johns, Gravenhurst.  
 Peter Stewart, South Indian.  
 J. B. Sanche, Mayerville.  
 Hugh Rankin, Prescott.  
 Thomas Upton, Sprucedale.  
 A. McDonald, Sundridge.  
 Andrew Hunter, Moorewood.  
 W. R. Craig, Russell.  
 B. B. Miller, Wiarton.  
 F. Iveson, Metcalf.  
 Richard Cole, South River.  
 F. N. Macfie, Dunchurch.  
 Thomas Kennedy, Parry Sound.  
 J. P. LaBrash, Maple Island.  
 G. G. Thrasher, Stirling.  
 William Dafoe, Avon.  
 James Packham, Brampton.  
 George Bilton, Newboro'.  
 James Tedford, Dundalk.  
 Andrew Morton, Brantford.  
 W. H. Blair, Arthur.  
 P. K. Newton, Tweed.  
 C. E. Clancy, Enterprise.  
 S. G. Best, Magnetawan.  
 W. H. Johnston, Havelock.  
 P. D. McKercher, L'Orignal.  
 D. McFarlane, Midland.  
 T. W. Jackson, Orono.  
 J. B. Shrigley, Dorset.  
 W. J. Taylor, Woodstock.  
 R. McConkey, Kearney.  
 J. S. Rogers, Toronto.  
 Geo. Morrison, Callander.  
 William Franklin, Franklin's Corners.  
 Chris. Nixon, Elmvale.  
 Karl Harttung, Berlin.  
 Wm. Robertson, Wingham.  
 J. R. Gibson, Mallorytown.  
 J. C. Gilchrist, Woodville.  
 Nap Longtin, The Brook.  
 William Martyn, Mitchell.  
 Harvey Rogers, Cambray.  
 C. C. Gilbert, Seeley's Bay.  
 Arthur Monteith, Rosseau.  
 W. C. VanLoan, Hagersville.  
 W. G. Otto, Vars.  
 Walker Unwin, Bannockburn.  
 E. A. Garnham, Strathfordville.  
 B. S. O'Loughlin, Yarker.  
 John Hines, Barrie.  
 John Stark, Hespeler.  
 A. Montgomery, Sebright.  
 C. W. Davidson, Mount Albert.  
 H. P. Dwight, Toronto.  
 M. W. Price, Mountain Grove.



## LIST OF ISSUERS OF DEER HUNTING LICENSES—1903.—Concluded.

- Harry Johnston, Coe-Hill Mines.  
 J. A. Orr, Sudbury.  
 William Panton, Milton.  
 F. J. Barber, Georgetown.  
 J. H. Lewis, Smith's Falls.  
 Patrick Howard, Collingwood.  
 J. A. Ellis, Fenelon Falls.  
 John Regan, Orillia.  
 S. A. Huntington, North Bay.  
 R. A. Arksey, Port Carling.  
 James Walmsley, Wiarton.  
 C. S. Gillespie, Campbellford.  
 E. R. Emery, Eden Grove.  
 A. McFayden, Huntsville.  
 H. W. McDougall, Carp.  
 A. Ronald, jr., Minesing.  
 Charles Pringle, Baldwin.  
 E. M. York, Verona.  
 John Allard, Sault Ste. Marie.  
 J. E. Walsh, Ottawa.  
 Wm. Whetstone, Lakeside.  
 William Irving, Webbwood.  
 James Myers, Orchard.  
 R. E. Hamilton, Grand Valley.  
 Lincoln Hutton, Bolton.  
 Hiram Hales, Bridgen.  
 S. L. Doolittle, Berlin.  
 W. D. Black, Parham.  
 W. F. Gibson, Grimsby.  
 W. H. Stafford, Deseronto.  
 H. E. Kelly, Marmora.  
 George Hogg, Barrie.  
 F. Motheral, Plattsville.  
 William Waters, Drumbo.  
 W. J. Gallagher, Frankford.  
 Geo. W. Hare, Tillsonburg.  
 Thos. Nichols, Hall's Bridge.  
 Isaac Allen, Mississippi Station.  
 F. W. Sieveright, Burk's Falls.  
 R. H. Menzies, Burk's Falls.  
 W. G. Armstrong, New Liskeard.  
 John A. Gill, Dunnville.  
 S. R. McKewen, Tehkummah.  
 William Higgins, Thessalon.  
 John Malone, Brechin.  
 John Hewitt, Brussels.  
 D. Somerville, Jack's Lake.  
 E. T. Palmer, Guelph.  
 A. J. Cross, Vankleek Hill.  
 I. A. Broadway, Norland.  
 Arthur Quantz, Langstaff.  
 G. T. McKague, Bexley.  
 Thomas White, Calabogie.  
 A. Almas, Folders' Corners.  
 John P. Evans, London.  
 Warrington Scott, Wooler.  
 E. G. Mitchell, Pembroke.  
 John A. Newton, Dead Creek.  
 J. A. Skelding, Shelburne.  
 J. A. Russell, Loring.  
 Andrew Crawford, Penetang.  
 C. T. Smith, Maxville.  
 C. O. Bean, St. Catharines.  
 J. A. Anderson, Seaforth.  
 William McKay, Madawaska.  
 Robert Jordan, Byng Inlet.  
 H. J. Snider, Harrowsmith.  
 Junius Bradley, Aylmer.  
 J. A. Sykes, Oshawa.  
 J. Chanonhouse, jr., Eganville.  
 William Brill, Sand Point.  
 Alex. Fraser, New Hamburg.  
 R. M. Effrick, Fenwick.  
 Nathaniel Shunk, Maple.  
 James Murdoch, Spragge.  
 O. E. Bagshaw, Vallentyne.  
 J. N. Stong, Woodbridge.  
 John Lunn, Galt.  
 A. W. Shields, Angus.  
 W. H. C. Roblin, Ameliaburg.  
 Wm. Smeaton, Inglewood.  
 J. D. Maitland, Elora.  
 O. V. Goulette, Gananoque.  
 W. A. Brodie, Unionville.  
 John George, Eganville.  
 H. Bingham, Crysler.  
 A. W. Wood, Plevna.  
 C. T. Cleland, Osgoode Station.  
 C. J. Hollands, Fort Frances.  
 P. McHugh, Eganville.  
 E. C. Bennett, Ahmic Harbor.  
 W. L. Tyson, Thornbury.  
 J. E. N. Miller, Combermere.  
 L. H. Timmins, Mattwa.  
 Harry Ketchum, Ottawa.  
 F. T. Pattison, Bridgeburg.  
 W. J. Harris, jr., Day Mills.  
 R. H. Clarke, O'Connor.  
 Neil McDougall, Port Arthur.  
 W. A. White, Whitehall.  
 D. H. Moore, Keene.  
 J. E. Wilcox, Hastings.  
 T. LaChapelle, Embrun.  
 Thos. H. Smith, Restoule.  
 T. A. Gourley, M.D., Killaloe Station.  
 J. A. Armstrong, Kinloss.  
 William Leavitt, Temiskaming.  
 H. E. Snell, Toronto Junction.  
 Lawrence Loughrin, Temagami.  
 J. H. Prosser, Sutton West.  
 J. D. McIntosh, Port au Baril.  
 S. C. McElwain, French River.  
 J. J. Hadley, Hadlington.  
 Thomas Sullivan, Bruce Mines.  
 G. Earnest Holmes, Clintonville.  
 J. A. Devenney, Whitney.  
 Alfred Leader, Meaford.  
 James Lochore, Blind River.  
 E. F. Cowan, Novar.  
 Newton Wilson, New Lowell.  
 A. C. Pratt, Toronto.  
 Dr. J. T. Ireland, Harriston.  
 L. J. Bennett, Strathay.  
 A. W. Cohoe, South Woodlee.  
 Michael Corkery, Trout Creek.  
 James Henderson, Warren.

## SHOOTING LICENSES ISSUED TO NON-RESIDENT SPORTSMEN—1903.

P. McKenzie, Montreal.  
 C. Meredith, Montreal.  
 F. L. Wanklyn.  
 John Nichols, Montreal.  
 A. J. Dawes, Montreal.  
 D. Robertson, Montreal.  
 P. Hayden, Montreal.  
 John F. Fuller, Alexandria Bay, N.Y.  
 A. E. Brush, Detroit, Mich.  
 T. C. Drake, Chicago, Ill.  
 R. S. Barnhart, Grand Rapids, Mich.  
 J. B. Miller, Pasadena, Cal.  
 H. A. Laughran, Pittsburg, Pa.  
 C. W. Laughran, Pittsburg, Pa.  
 W. C. McCloy, New York, N.Y.  
 T. S. Gillespie, Montreal.  
 B. A. Alexander, France.  
 B. F. Dutton, Boston, Mass.  
 J. LeClair, Buffalo, N.Y.  
 John Kuehn, Buffalo, N.Y.  
 Charles Becker, Buffalo, N.Y.  
 John Wende, Buffalo, N.Y.  
 F. S. Hodges, Boston, Mass.  
 Louis Cabot, Boston, Mass.  
 A. L. Drummond, Montreal.  
 H. E. Scott, Cleveland, Ohio.  
 G. H. Richards, Boston, Mass.  
 R. C. Gillett, Montreal.  
 E. L. Welch, Philadelphia, Pa.  
 E. C. Knight, Philadelphia, Pa.  
 Alex. Cochrane, Boston, Mass.  
 H. Hathaway, Dedham, Mass.  
 C. J. Paine, jr., Boston, Mass.  
 S. P. M. Tasker, Philadelphia, Pa.  
 W. M. Barnum, New York.  
 Henry M. Sage, Albany, N.Y.  
 C. W. Mainwaring, Albany, N.Y.  
 A. Hemenway, Boston, Mass.  
 H. B. Bigelow, Boston, Mass.  
 G. M. Laughlin, Pittsburg, Pa.  
 George Magill, Buffalo, N.Y.  
 Stephen Lett, Allentown, Pa.  
 T. H. Groman, So. Bethlehem, Pa.  
 W. B. Dickerman, New York.  
 C. A. Griscom, Philadelphia, Pa.  
 R. E. Griscom, Philadelphia, Pa.  
 R. W. Trotter, Buffalo, N.Y.  
 C. Wheatley, Buffalo, N.Y.  
 C. W. Cochrane, Pittsburg, Pa.  
 J. H. Kinser, Pittsburg, Pa.  
 J. Hilburger, Buffalo, N.Y.  
 J. M. Gohn, Buffalo, N.Y.  
 R. J. Magill, Buffalo, N.Y.  
 Henry Shearer, Buffalo, N.Y.  
 R. E. Follett, Munising, Mich.  
 U. S. Baird, Allegheny, Pa.  
 J. Witherspoon, Allegheny, Pa.  
 J. M. Davidson, Allegheny, Pa.  
 J. D. Harrington, Erie, Pa.  
 S. M. Kennedy, Conneaut, Ohio.  
 Adan Wilbert, Conneaut, Ohio.  
 F. B. Joiner, Conneaut, Ohio.  
 W. E. Joiner, Conneaut, Ohio.  
 E. A. Montgomery, Toledo, Ohio.  
 C. Flouring, Toledo, Ohio.

Frank Wolfe, Pemberville, Ohio.  
 J. Brandeberry, Pemberville, Ohio.  
 H. McAfee, Pittsburg, Pa.  
 W. P. Clement, New York.  
 A. George, Tonawanda, N.Y.  
 L. Wattengail, Tonawanda, N.Y.  
 J. S. Thompson, Tonawanda, N.Y.  
 F. M. Beck, Buffalo, N.Y.  
 C. F. Benzing, Buffalo, N.Y.  
 W. J. Callahan, Niagara Falls, N.Y.  
 W. Hamilton, Niagara Falls, N.Y.  
 J. Evans, Niagara Falls, N.Y.  
 Dr. Brownell, Rochester, N.Y.  
 T. J. Rogers, Conneaut, Ohio.  
 A. H. Salter, Rochester, N.Y.  
 C. H. Meitzler, Rochester, N.Y.  
 Robert Hardy, Niagara Falls, N.Y.  
 W. H. Smith, Buffalo, N.Y.  
 J. H. Henderson, Conneaut, Ohio.  
 Henry Neumer, Conneaut, Ohio.  
 F. D. Christman, Conneaut, Ohio.  
 T. Clark, Conneaut, Ohio. f  
 C. H. Whittleton, New York.  
 Frank Over, Pittsburg, Pa.  
 R. Stuart, Chicago, Ill.  
 T. T. Caldwell, Oil City, Pa.  
 B. J. Green, Lockport, N.Y.  
 E. H. Fence, Lockport, N.Y.  
 J. C. Gill, Streetsville, Ohio.  
 James Cassidy, Pittsburg, Pa.  
 W. H. Nichols, New York.  
 R. Wilbur, Bethlehem, Pa.  
 E. Wilbur, Bethlehem, Pa.  
 E. O'Leary, Bethlehem, Pa.  
 S. A. Devendorf, New York.  
 D. Isaacs, Niagara Falls, N.Y.  
 Eric Krueger, Niagara Falls, N.Y.  
 Henry Kreser, Buffalo, N.Y.  
 William Robb, Buffalo, N.Y.  
 General W. Healy, New York.  
 A. F. Bowker, Wilson, N.Y.  
 J. Monnen, Buffalo, N. Y.  
 F. E. Saums, Wilson, N.Y.  
 F. Caswell, Niagara Falls, N.Y.  
 Andrew Mills, New York.  
 J. T. Sullivan, Dunkirk, N.Y.  
 B. Sutherland, Wilson, N.Y.  
 J. T. Monnen, Buffalo, N.Y.  
 Homer Collins, Espyville, Pa.  
 C. S. Collins, Espyville, Pa.  
 W. H. Bishop, Espyville, Pa.  
 W. H. Wilt, Espyville, Pa.  
 F. K. Wick, Youngstown, Ohio.  
 J. McAfee, Pittsburg, Pa.  
 S. McAfee, Pittsburg, Pa.  
 F. W. Gill, Allegheny, Pa.  
 J. W. Collins, Edgewood, Pa.  
 W. T. Slocum, Wilson, N.Y.  
 A. C. Bigelow, Wilson, N.Y.  
 Frank Tower, Wilson, N.Y.  
 John Baird, Irving, N.Y.  
 R. V. Covert, Lockport, N.Y.  
 J. J. Marshall, Lockport, N.Y.  
 Dr. Eades, Conneaut, Ohio.  
 W. Chapman, Conneaut, Ohio.

## SHOOTING LICENSES ISSUED TO NON-RESIDENT SPORTSMEN—1903.—Concluded.

- S. M. Smith, Conneaut, Ohio.  
 D. R. Tinker, Conneaut, Ohio.  
 Thomas Hunter, Pittsburg, Pa.  
 A. Lonahaugh, Pittsburg, Pa.  
 W. Kletzley, Pittsburg, Pa.  
 C. Rupert, Pittsburg, Pa.  
 Frank Cooper, Pittsburg, Pa.  
 W. T. Sears, Harrisburgh, Pa.  
 W. S. Ray, Harrisburgh, Pa.  
 H. E. Hershey, Harrisburgh, Pa.  
 F. F. VanBuren, New York.  
 M. M. VanBuren, New York.  
 J. D. Archibold, New York.  
 B. Dominick, New York.  
 J. G. Todd, New York.  
 C. H. Woods, Worcester, Mass.  
 D. A. Hamilton, Worcester, Mass.  
 J. N. Jarvis, New York.  
 C. W. Woods, Worcester, Mass.  
 Hon. Reginald Ward, London, Eng.  
 H. Brassey, London, Eng.  
 J. F. Nichols, Detroit, Mich.  
 J. Bishop, Wyandotte, Mich.  
 J. Bishop, jr., Wyandotte, Mich.  
 Arthur Clarke, Wyandotte, Mich.  
 G. Baumler, Wyandotte, Mich.  
 Frank Marx, Wyandotte, Mich.  
 M. M. Stanton, Detroit, Mich.  
 Frank W. Eddy, Detroit, Mich.  
 Fred. Tower, Detroit, Mich.  
 John Munroe, Detroit, Mich.  
 F. H. Walker, Detroit, Mich.  
 H. J. Meredith, Detroit, Mich.  
 F. H. Newberry, Detroit, Mich.  
 Strathern Hendrie, Detroit, Mich.  
 F. G. Ryan, Detroit, Mich.  
 A. M. Rantoul, Boston, Mass.  
 W. D. Tristam, Detroit, Mich.  
 A. Humphrey, St. Clair Flats, Mich.  
 C. G. Cadieux, Grosse Point, Mich.  
 Archie Michie, Grosse Point, Mich.  
 A. R. Baillie, Detroit, Mich.  
 T. F. Ramey, Detroit, Mich.  
 C. M. Englis, Chippewa Bay, N.Y.  
 H. W. Williams, Chippewa Bay, N.Y.  
 J. Y. Davies, Chippewa Bay, N.Y.  
 F. G. Bourne, Chippewa Bay, N.Y.  
 John Doe, Chippewa Bay, N.Y.  
 Beldon Roach, N.Y.  
 S. G. Roach, New York.  
 S. B. Palmer, Rochester, N.Y.  
 G. W. Davis, New York.  
 E. Hoover, Michigan.  
 T. W. Atwood, Michigan.  
 E. Bosley, Michigan.  
 B. T. Streeter, Michigan.  
 O. W. Linkhart, Port William, Ohio.  
 H. W. Olin, New York.  
 H. Thwaite, New York.  
 E. Mackey, Jamestown, N.Y.  
 S. H. P. Pell, New York.  
 T. J. Northrup, Buffalo, N.Y.  
 Gustave Patin, Hanai, Indo, China.  
 G. H. Schachtale, Bellevue, Ohio.  
 C. Millar, Toledo, Ohio.  
 J. G. Hafsteeter, Toledo, Ohio.  
 J. S. Stokes, Philadelphia, Pa.  
 Charles Evans, Philadelphia, Pa.  
 F. W. Preiss, Buffalo, N.Y.  
 G. W. Floss, Buffalo, N.Y.  
 Louis Frees, Buffalo, N.Y.  
 F. R. Metcalf, Buffalo, N.Y.  
 R. J. Gould, Buffalo, N.Y.  
 Charles Fitch, New York.  
 C. Abercrombie, New York.  
 W. H. Merrill, Peppner, Mass.  
 L. E. Belknap, Mayville, Mich.  
 G. C. Watson, Caro, Mich.  
 A. Durphy, North Branch, Mich.  
 J. B. Fenton, Flint, Mich.  
 D. A. Maloney, Soo, Mich.  
 Henry Vannest, Peck, Mich.  
 J. Waddell, Grand Rapids, Mich.  
 E. C. Fox, Grand Rapids, Mich.  
 J. T. Byrne, Grand Rapids, Mich.  
 B. F. Hall, Belding, Mich.  
 R. Sayler, Lewisburg, Ohio.  
 F. J. Wilson, Lewisburg, Ohio.  
 C. Rhodes, Brookville, Ohio.  
 J. S. Hopner, Lewisburg, Ohio.  
 George Stuart, Cedar Rapids, Iowa.  
 J. H. Andrews, Ackron, Ohio.  
 O. G. Castle, New York.  
 H. S. Castle, North Branch, Mich.  
 C. D. Freeman, Medina, Ohio.  
 W. D. Bradshaw, Jamestown, N.Y.  
 C. E. Bailey, Jamestown, N.Y.  
 S. G. Weston, North Branch, Mich.  
 J. S. Warren, Medina, Ohio.  
 F. W. Korff, Lockport, N.Y.  
 J. F. Ling, Lockport, N.Y.  
 A. E. Young, Buffalo, N.Y.  
 G. E. Angell, Detroit, Mich.  
 C. E. Johnston, New York.  
 J. R. Marsh, New York.  
 T. H. Conklin, Wilmington, Ohio.  
 E. Lukins, Wilmington, Ohio.  
 W. O. Maddux, Xenia, Ohio.  
 A. E. Hawker, Dayton, Ohio.  
 H. W. Collett, New Burlington, Ohio.  
 A. E. Clevenger, Wilmington, Ohio.  
 O. Swigart, Xenia, Ohio.  
 C. J. Heinold, Buffalo, N.Y.  
 W. O. Cutler, Buffalo, N.Y.  
 O. J. Carter, Toledo, Ohio.  
 D. D. Johnson, Toledo, Ohio.  
 E. S. Peck, Cleveland, Ohio.  
 Fred Scott, Niagara Falls, N.Y.  
 R. Hamilton, Niagara Falls, N.Y.  
 Howard Weirs, Allentown, Pa.  
 F. B. Scheirer, Allentown, Pa.  
 A. W. Hendricks, Allentown, Pa.  
 G. A. Farmer, Montreal.  
 F. B. Elliott, Pittsburg, Pa.  
 W. J. Wilson, Pittsburg, Pa.  
 J. G. McDonald, Pittsburg, Pa.  
 Tindell Pitts, Pittsburg, Pa.













Goderich Fishing Fleet, 1884.

R. R. SALLOWS, ARTIST.





E. HART, ARTIST.

Fishing Station Southampton, Ont.







Niigon Trout (*Salvelinus Fontinalis*).

FIFTH ANNUAL REPORT  
OF THE  
DEPARTMENT OF FISHERIES  
OF THE  
PROVINCE OF ONTARIO.  
1903.

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PRINTED BY ORDER OF  
THE LEGISLATIVE ASSEMBLY OF ONTARIO.



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Printer to the King's Most Excellent Majesty.  
1904.





WARWICK BRO'S & RUTTER, PRINTERS.  
*T O R O N T O .*

To His Honour the Honourable William Mortimer Clark,

Lieutenant-Governor of the Province of Ontario, Etc., Etc.

May it please Your Honour,—

I have the honour to submit herewith, for the information of Your Honour and the Legislative Assembly, the Fifth Annual Report of the Department of Fisheries of this Province.

I have the honour to be,

Your Honour's most obedient servant,

F. R. LATCHFORD.

Toronto, 19th February, 1904.

Commissioner of Fisheries.

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# REPORT

OF THE

## DEPUTY COMMISSIONER OF FISHERIES

FOR THE YEAR

### 1903.

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To the Honorable F. R. Latchford, Commissioner of Fisheries for Ontario :

The undersigned has the honor to submit herewith the Fifth Annual Report of the Department of Fisheries for the year ending 31st December, 1903.

#### INTRODUCTORY.

The returns indicate a small diminution in the catch as compared with that of 1902. The demand for fish has, however, been active, and the prices exceptionally high ; so that the estimated value of the catch is considerably greater than that of last year. In Lakes Superior, Huron and the Georgian Bay the falling off is again attributed to the rough weather, which prevailed throughout the greater part of the season, and not to a scarcity of fish, for when the weather permitted the catches are said to have been unusually large. In Lake Erie the gradual shrinkage from year to year may, it is believed, be directly chargeable to the greed of American fishermen, and to the practically unlimited privileges which they have been allowed. They have operated with every kind of implement, and, virtually, without restraint. This is assumed to be the principal reason why the stringent restrictions which have been so long maintained by Ontario have not been more effective in increasing the yield on this side of the lake; and unless a disposition is manifested on the part of the American authorities to take immediate action in the direction of effective preservative regulations and safeguards, no tangible or defensible argument can be adduced against the claim of our fishermen to equally participate in the extermination. The matter is further touched upon in the paragraph, "The Great Lake Fisheries."

A diminished catch in a number of places has no doubt resulted from the fact that many of the fishermen, finding other employment more remunerative, abandoned their fishing operations for a portion of the year, or did not pursue them with the assiduity they perhaps would otherwise have done

The cause of a shortage in a certain portion of a lake in one season as compared with another sometimes arises from the fact that, owing to rough weather, the fishermen may not be able to lift their nets for several days. The fish decompose and pollute the water, and the effect is noticeable for the remainder of the season. Our own fishermen have suffered considerably in that respect, but not to the same extent it is believed that the American fishermen have done. We gather from a report of one of the States bordering on Lake Erie that fifty miles of net are claimed to have been

lost this year by fishermen from one port alone. The number of fish caught by these derelict nets, not to speak of the effect of the decomposed fish upon the fisheries, must be considerable.

The improvident custom of setting gill nets late in the fall and during the winter months is believed to have a disastrous effect upon the fisheries, as well as to result in great pecuniary loss to the fishermen from the sweeping away of their nets during that usually stormy period.

In Lake Ontario it is reported that the species of fish known as Ciscoe, which was caught years ago in such large numbers, "is coming back again," and that out of 6,000 fish taken in two or three lifts by Bronte fishermen, 90 per cent. were ciscoes. This gladdened the hearts of the old fishermen, who prophesy that they will be as numerous as in former years. It is hoped their expectations may be realized. There is no finer flavored fish in the market than the ciscoe.

Angling is reported to have been good everywhere, and particularly so in the Nepigon. A large number of tourists visited the river, and some fine trout were hooked. More Canadians wet their lines than usual. It has been recommended that fly fishing only should hereafter be permitted in the Nepigon, and that live bait, artificial minnows, and mechanical contrivances of all kinds should be tabooed. Certainly the former is more sportsmanlike, and is sufficiently deadly in skilful hands to insure a full creel. This is evidenced by the fact that one visitor during a short stay killed twelve trout (*salvelinus fontinalis*) weighing from five to seven pounds each, and of an aggregate weight of 60 pounds. Sand River, which empties into Lake Nepigon at its north west corner, is said to be fairly alive with brook trout up to six pounds in weight, and no doubt will, as soon as it can be conveniently reached, become second only to the Nepigon in popularity.

Several sea salmon are reported to have been taken in the St. Lawrence. Some doubt, however, has been expressed as to whether these fish were of the species known as *salmo salar*; but, from the descriptions given, there is every reason to believe that they were. If any one capturing a fish, which he thinks is a true salmon, would carefully pack it and forward it to the Department, the Department would feel under an obligation to him, and would gladly pay the express charges thereon. On page 97 will be found a plate which will enable the species to be identified.

Reports have from time to time reached the Department that a fish said to be the Grayling is to be found in Northern Ontario; but these reports have never been verified. Richardson, in "Fauna Boreali-Americana," states that it abounds in the rocky streams that flow through the primitive country lying north of the 62nd parallel of latitude, but he does not record that he found it further south. It is said to still inhabit the waters of both the southern and northern peninsulas of Michigan, and that it was formerly very abundant in the Au Sable and Jordan Rivers of Northern Michigan, though now practically exterminated by the lumbering operations carried on in that region. It would certainly be a delightful bit of information to find that this fish really was to be found in Ontario waters; and with a view to assisting in determining the fact, a cut of the Grayling has been inserted at p. 98, in order that comparison may be made. Its dorsal fin is so unlike that of any other fish that anyone will be able to decide the matter without difficulty, as soon as he sees the plate. Its coloring is described by Jordan and Evermann to be as follows: "His pectorals are olive-brown, with a bluish tint at the end; the ventrals are striped with alternate streaks of brown and pink; the anal is plain brown; the caudal is very forked and plain; while the crowning glory is the immense dorsal, which is dotted with large, brilliant-red or bluish-purple spots, surrounded with a splendid emerald green, which fades after death—the changeable shade of green seen in the peacock's tail." There is said to be no species sought for by anglers which surpasses the Grayling in beauty or gameness.

A Speckled Trout weighing three pounds was taken in a net in Lake Erie opposite the County of Kent. The fisherman was thoughtful enough to present it to the Department, and it has been mounted for preservation as a *rara avis* in those waters.

The reports from tourists who have visited Lake Nipissing are that the bass, pickerel, and maskinonge fishing has surpassed all previous years.

The speckled and grey trout fishing in the lakes along the Temiskaming and Northern Ontario Railway is said to have been excellent. Brook trout have been taken in Pine, Goose, Anderson, Rabbit, Rib, Temagami and numerous smaller lakes, which tipped the scales at from two to five pounds each. It is thought that Rabbit, Temagami and Rib Lakes are the finest trout lakes in Northern Ontario, east of the Nepigon. The grey trout readily accept bait, and specimens weighing from 20 to 27 pounds have been taken with rod and line. Our American friends are already spying out locations for permanent camping grounds. The adoption of strict measures with respect to angling in these waters, and regulating camping parties—measures similar to those in force on the Nepigon—are recommended.

The Department has often been asked the question, "Where shall I go for some good fishing?" and in order to supply this information more fully than it has been possible to do heretofore, a circular letter was addressed to each overseer containing the following questions:

"Name the lakes, rivers and streams in your division in which good angling is to be had, mentioning such waters only as it is known will afford good fishing.;

"State what fish are contained therein, whether bass, maskinonge or speckled trout:

"State how waters may be reached; and

"What accommodation there is for visitors."

A synopsis of the replies has been prepared, and will be found elsewhere under the heading "Angling Waters."

#### Statistics.

The statistics which are to be found in another portion of the Report have been prepared with the utmost care, and are believed to furnish an accurate account of the season's operations. The usual difficulty has been experienced in impressing the fishermen with the necessity of making their returns promptly, and this has made it absolutely impossible to complete the Report as early as otherwise might have been done.

Licenses to fish with 4,005,420 yards of gill net, 488 pound nets, 523 hoop nets, 100 seines, 32 dip nets, and three machines, besides several thousand hooks, were issued.

The occupation has given employment to 2,443 men, and 24 gasoline boats, 109 tugs, and 1,370 other boats have been in use.

An estimated capital of \$846,368 is invested in the industry.

The aggregate catch amounts to 27,194,205 pounds, as compared with 23,714,570 in 1902, a decrease of 2,520,365.

The estimated value of the catch is \$1,535,144.

A list of overseers, with the territory under the jurisdiction of each, will be found at page 62.

Statements have been prepared showing:

1. The revenue derived from each division (p. 68);

2. The number in detail of fishermen, tonnage and value of tugs, vessels and boats, quantity and value of fishing material, and the kinds and quantity of fish caught (pp. 70 to 87);

3. The gross yield of the different kinds of fish in each division in 1902 and 1903, and the increase or decrease (p. 90);

4. The total quantity of each kind of fish taken, as compared with the quantity taken in 1902, and the increase or decrease (p. 88);

5. The value of the different kinds of fish taken (p. 91);

6. The number of tugs, men, boats, etc., engaged in the industry, the quantity of nets licensed, and the value thereof (p. 91);

7. The value of the Ontario fisheries from 1870 to 1903, inclusive (p. 92); and



8. The quantity of fry distributed by the Federal Government in the Province since Confederation. (p. 92).

#### Preservation vs. Revenue.

There seems to be an impression—an erroneous impression it may be said—in the minds of many people, that the Department of Fisheries is administered wholly from a revenue standpoint, and surprise is sometimes expressed that a larger revenue is not realized. It may, therefore, not be out of place to mention that, while it is of course important and absolutely necessary that a revenue should be derived, and that the Department may be self-sustaining, the matter of paramount importance, and the one which must be kept constantly and prominently before it, is the conservation and perpetuation of this great heritage—no easy matter, it may be supposed, in view of the large number of applications which are received, and the vigor with which they are pressed. If there were no such contingency to be borne in mind, the receipts might possibly, for a few years at least, be very considerably increased. An application may, however, be under consideration for weeks before the Department is satisfied that the license may properly go, or the reverse. If it is considered that as many licenses have already been issued as the fishery will properly stand, all others are refused. If it is thought that the issue of a license will prejudice the livelihood of another fisherman, it is declined. In the case of the inland lakes in the older parts of the Province, it is first ascertained what kinds of fish the lake contains for which a license is asked. If few game fish, a license for a limited number of hoop nets is sometimes approved. It has been satisfactorily demonstrated that where these nets are fished strictly in accordance with the conditions imposed, which are very emphatic as to the taking of certain kinds of fish, and the waters are depleted of the coarser and less valuable kinds, there has been a noticeable increase in the quantity, and improvement in the size and quality of the game fish. But even in the case of such waters, where the locality is densely settled, the policy is that no net fishing whatever shall be allowed, for in such localities there are usually to be found many people with whom even the coarser kinds of fish which may be taken with hook and line form an important item of food. If the application is for the privilege of fishing in a lake in New Ontario, the question of the suitability of the locality for settlement is considered, and its future needs are anticipated, for in such districts settlers must for a long time depend for a goodly portion of their food upon the fish which the waters yield; and the Department has refused many applications for such waters, though the adoption of an adverse policy would materially add to its receipts. How delightfully pleasant and agreeable the work of issuing Licenses would become, could a license be issued to every one who applies therefor. But, while the question of revenue is, as has been pointed out, one of secondary consideration, it is at the same time believed that it might be considerably increased, that the fees heretofore charged in some cases have been too low, and might properly be raised without being made burdensome; and that angling fees might, and should, be charged non-residents in some sections, where free fishing has heretofore been allowed—where visitors, who contribute nothing for entertainment or for maintenance, enjoy the fruit of our labor and the benefits of our provident administration.

#### Observance of the Law.

There have been seized and destroyed, or otherwise disposed of, while in illegal use, or where there was prima facie evidence of the same having been held for illegal use, 130 trap nets, 106 gill nets, 6 seines, 2 hoop nets, 300 hooks, and 41 spears. There have been 105 prosecutions reported. Of these, 42 were for fishing without a license, 21 for catching and dealing in fish out of season, 14 for using the spear illegally, 13 for killing or having game fish contrary to law, 3 for dynamiting fish, and a number for miscellaneous offences. Nearly one thousand dollars have been collected in fines. In a few

cases the offender has been merced in a nominal amount only, whereas by Provincial Act the minimum fine which must be imposed is \$10. When the law provided that a smaller fine could be imposed, it was found that it had no deterrent effect whatever upon offenders; indeed, it was thought only to encourage their contempt for both the law and its officers.

A number of offences have been committed, serious enough, but which it is believed occurred more from carelessness or unbusinesslike methods than from deliberate intent to evade the law. In some cases the fishermen had not placed their name as well as that of the consignee upon their boxes when making their shipments, and others had not marked their nets in a manner enabling them to be identified. The fishermen are realizing that these provisions are manifestly in their interest, and are a protection to the man who wants to do business honestly. Occasionally a man has been found fishing in territory other than that described by his license, but this is an infrequent occurrence, and is believed to be largely accidental.

It is pleasing to believe that since the organization of the Department there has been a remarkable change in public sentiment. Five years ago there was but little interest shown in fishery matters; there was amazing apathy with regard to the most flagrant offences; indeed, even some of our justices connived at wrong-doing, and facilitated the escape of offenders. But most of this has changed. A greater regard for our laws and regulations is now not only manifested, but is being promoted almost everywhere; and communities are being educated to respect these laws and require their observance. In this connection Anglers' Associations could do yeoman service, and we should like to see one or more in every county.

The undersigned was during the summer invited to meet the Board of Trade of a certain town to offer suggestions for the better protection of the fisheries in the locality. It was alleged that the licensed fishermen were taking bass, that there could be no possible doubt of it, because the town constable had himself seen bass in a fisherman's boat. It was pointed out that no better evidence could be had, and that the county constable should be directed to at once lay an information against the parties, as was his duty under the Act. But, although the matter was revived by letter, no action appears to have been taken. It was probably one of those cases of mistaken identity, or where much talk was indulged in because it was cheap; but when it came to swearing out an information, that was a different matter. Such reports are constantly being investigated, but it frequently transpires that they are founded merely upon hearsay.

#### Protective Service.

The steamer "Gilphie" and the sailboats "Maud" and Gladys" on the Georgian Bay have done good patrol service. The reports of the officers in charge will be found in their proper places. These boats went into winter quarters on the 10th December, navigation closing a few days earlier than in 1902. The overseers in charge of the "Maud" and "Gladys" have applied to have gasoline engines installed in these boats, on the ground that they cannot properly protect their districts without this auxiliary power. They say many of the fishing craft are so equipped, and that their sailboats are handicapped in a race with such boats, owing to the vagaries of the wind. This change would increase somewhat the cost of maintenance, but the larger area which it would be possible to cover, and the greater efficiency attained, would, it is believed, more than compensate for the outlay.

The launch "Eva Bell" has patrolled the Rideau waters, and that much illegal work was prevented by her presence is illustrated by the fact that as soon as she had been taken off no less than 22 convictions were made. The crew consists of two men, and the boat's movements are chiefly directed by the district overseer.

During the close season, a patrol boat was placed on Lake Simcoe for a fortnight and it is believed with good results.

### Overseers, Their Salaries and Duties.

One hundred and twenty-seven overseers are employed, of whom 118 are paid salaries varying from \$25 to \$600 per annum, according to the importance of the district under their supervision, and the duties expected of them. These sums amount in the aggregate to over \$14,000, and in addition \$4,000 were paid them for travelling and other expenses. But the work performed cannot always be gauged by the amount of salary paid, for some overseers who receive but \$25 in salary, in their desire to see the fisheries well cared for and fostered, have rendered much service for which no pecuniary consideration was expected. Besides the regular staff of overseers, a number of guardians were appointed during the spring and fall close seasons for waters where poaching has been known to occur, and for this service \$1,097 has been paid. So that on account of protection alone, including the maintenance of the cruiser and patrol boats, the Department has expended during the year the very considerable sum of \$25,500.

Each overseer is required to render to the Department a monthly statement of the duties performed by him, the localities visited, the distances travelled, and the amounts expended, and to make affidavit that the account is true in these particulars. He is also required to send in monthly a statement of the moneys received and from whom. This enables the Department to keep a check upon his movements and transactions.

The plan of protection adopted is that which was formerly approved for many years by the Department at Ottawa, except that in those portions of the Province where the work is chiefly of supervision five district overseers have also been appointed. It was believed that having overseers scattered liberally over the country would be the best system for this Province; but even with the generous provision which has been made in this respect—the number has been increased from 94 in 1899 to 127 in 1903—the territory to be supervised is so large, and the number and variety of its waters so great, that the volume of work which these men have to perform, to give anything like efficient protection, must be apparent to anyone who will give the matter a moment's thought or consideration; and it will not be surprising if violations do and will occur. Smuggling, stealing, housebreaking, and many other offences against the law of the land have occurred, and will occur until the millenium, no matter how vigilant, zealous, and active officers may be who are specially appointed to prevent these crimes.

The duties of our overseers are not restricted to the work of protection only, but they have other and very important duties to perform. At the close of the season they are required to make a return to the Department of the fish caught in their respective divisions, and the prices received for the same. To give an estimate of the value of the fishing material used. To report upon the year's operations, and, specially (1) if there has been an increase or a decrease in the catch of the different kinds of fish, as compared with that of the previous year, and the cause thereof—in case of a decrease whether it arises from a scarcity of fish, from local causes, or from a less vigorous prosecution of the fishery, and in case of an increase to state also the causes to which it should be ascribed: (2) the percentage of fish exported or sold in Canada, as well as an estimate of the quantity used for home consumption; (3) whether any abuses have existed, and what measures are recommended for their abatement; (4) whether the close seasons have been strictly observed, and what steps have been taken towards enforcing them; (5) whether any illegalities came to their knowledge; (6) whether the law with respect to the pollution of waters has been observed; and, generally, to offer for the consideration of the Department any suggestions which a knowledge of the wants of their divisions enables them to make for the improvement and better protection of the fisheries therein.



### Close Seasons.

To aid in the preservation of the fisheries, and having regard to the limited capacity of the hatcheries in the Province, it has been deemed proper heretofore to maintain restrictions on the taking of fish at certain seasons of the year. The seasons, however, it is said, do not apply effectively to the Province as a whole, and the consequence is that a systematic effort is every year made by fishermen or their friends to have one or other curtailed; and the pressure has usually been so persistent as to be irresistible. But where privileges have been granted in one section and withheld in another, as has been done in recent years, much dissatisfaction arises, and the enforcement of the law in the latter is made practically impossible. If, therefore, a close season is to be of service, it would appear necessary, to remove existing inequalities, that the Province should be divided into zones, and as nearly as may be an appropriate season fixed for each. The season should then not be tampered with, but should be strictly enforced. Proving possession under such conditions would be not more difficult than under a system which approves of the maintenance of a close time in one locality and its abolition in another. The Province can only suggest, however, as the subject is wholly within the jurisdiction of the Dominion; but it is at the same time so closely allied to Provincial administration, and so vitally affects Provincial property, that it is considered quite within the function of the Department to make these observations.

### The Sale of Game Fish.

Notwithstanding that the sale of speckled trout, bass and maskinonge is prohibited by statute, and notwithstanding that heavy penalties have in the past been imposed for the offence, the Department has learned that game fish are occasionally taken, marketed and disposed of surreptitiously; and this state of affairs may be expected to continue so long as persons unscrupulous enough to purchase the fish may be found. The Department has required its officers to be specially vigilant in the examination of shipments and the premises of dealers, and to do this at frequent intervals, though no specific instructions for an examination should be received. It can hardly be credited that these fish are being taken by the licensed fishermen, as they fully understand that the consequence would be the cancellation of the licenses, and, therefore, the loss of their means of livelihood.

### Dynamiting.

Reports from the St. Lawrence, in the vicinity of Brockville and Cornwall, have again been received that fish were being dynamited, and special efforts were put forth to apprehend the parties, but without success. The offenders, who were believed to cross the river from the American side, pursued their nefarious work at night, which made it difficult for the regular officers to bring them to account, and another year a substantial reward should be offered for information that would lead to the conviction of the parties. A term in gaol, without the option of a fine, would be the proper reward for such conduct.

### Stocking.

The most important work, or that, perhaps, of which most has been heard, in which the Department has been engaged during the year, is the continuation of that so vigorously entered upon in 1901, viz., the re-stocking of our inland waters with black bass, its game and edible qualities fully justifying the high esteem in which it is held by the Department as the best all-round fish for introduction into our waters. Deposits have been made in no less than 25 different lakes and rivers. Attention has been again chiefly directed to waters where large numbers of persons congregate during the summer, over 4,000 fish having been placed in Lakes Muskoka, Joseph and Roseau alone. These lakes are reported to be teeming with small bass; and the same may, in fact, be said of all waters which have been stocked, namely, that they are literally

swarming with the young of these fish. The work performed the first year is already manifesting itself in improved angling. A carload of bass was successfully sent as far as Rat Portage, and deposited in a small lake in the vicinity of the Lake of the Woods, illustrating that parent fish may be transported almost any distance under proper conditions, and with conscientious attention. Some doubt was felt as to whether several hundred parent fish confined in such small space as is afforded in an ordinary car could be sent so far without very great loss, and much credit is due Messrs. Ellis and Wood, the Departmental officials in charge, for the success of the experiment is undoubtedly due to their faithful attention to duty. The water had to be frequently changed, kept thoroughly oxygenated, and at the proper temperature, which required unrelaxed attention day and night. A carload of speckled trout from the Nepigon was deposited near Rat Portage.

With the increase of summer resorts, and the number of persons who indulge in an annual outing, the drain upon the fish in our lakes and rivers has become relatively greater; and if the supply is to be increased, the utmost vigilance must be exercised to prevent waste. Indeed, it may be considered necessary for a time to limit the catch much below what it has heretofore been legal to take. All true sportsmen will be anxious to co-operate in every possible way to accomplish so desirable a result; and, in addition to a limited catch, no better proposition, it is believed, could be made for this purpose than that contained in a former report, viz., to return to the water for a year or two all undersized, and all uninjured fish not actually required for consumption after having enjoyed the sport of playing them. The bass is a very hardy fish, and this could safely be done in perhaps 99 cases out of 100 without fear of mortal effects. Some anglers, who do not sympathize with this view, will maintain that a fish once hooked will invariably die, but that this contention is erroneous is sustained by the fact that the bass first deposited by the Province some years ago were taken in this way, and with but little mortality as the result. Last year one of the State Commissions purchased 500 bass, all of which were caught with hook and line, and not a single fish, it is said, died. The source of danger is in the handling when the fish is taken from the hook, or when severely wounded in the throat or gills. If this proposition should not appeal to the good judgment of anglers, it may then be deemed necessary to set apart waters which are being stocked, and to prohibit angling therein until the increase will justify their being again opened, as has been done in the case of some of our rivers. We actually found that parties were taking the fish before the day on which they had been planted had closed. To attempt to re-stock under such circumstances would not only be folly, but a waste of time and money.

All these precautions would probably not now be required, had former Administrations appreciated the importance of preserving our game fish. It will be remembered that it is only since the administration was assumed by the Province that the sale of speckled trout, black bass, and maskinonge has been prohibited, and that fishermen have not been allowed to net for bass or maskinonge. Prior to that time these fish were dealt in commercially, and immense quantities taken every year and exported from the Province. In 1898, under Dominion administration, the returns show that 970,375 pounds of bass, and 774,320 pounds of maskinonge were taken. This enormous drain, which had been going on for years, had nearly exhausted the inland waters.

#### The Tourist Trade.

"For beauty and for charm, for unblemished loveliness," the lakes and rivers of Ontario stand supreme; and this is testified to by the fact that in almost every part of this glorious Province the summer tourist is in the holiday season to be found. "He represents at once a diversification and an industry. . . . He is so familiar a figure that it is difficult for us to appreciate either his novelty or his importance. . . . Should he suddenly revert from his nomadic habit to the settled stay-at-home ways of his fathers, we should not only miss him grievously in our landscape, but scores of

trades would be paralyzed by his disappearance from his accustomed haunts ; . . . many a town would lose its principal sources of support, railroad schedules would be revolutionized, and steamboat sailings sadly deranged. . . . He has become an integral and vital part of our social and commercial organization." To what extent the Ontario Government, in restoring the fishing in our inland lakes, has contributed to the prosperity of the people of the Province, it is, and will be, impossible to estimate ; but some of the fruits are that hundreds of persons are annually induced to visit us who would not otherwise come, and thousands of dollars are finding their way into the pockets of our people which would be spent elsewhere.

#### Gasoline Boats.

Gasoline engines as an auxiliary power are being used by a number of our fishermen, the licenses issued for boats so equipped being 24, as against 14 in 1902. It is conceded that they are a great saving of time and money ; but the advantages of such power are only appreciated by those who have been fortunate in installing a reliable engine. This is not the only requisite, however, for not the least essential attribute to the successful working of an engine is the use of gasoline of a specific gravity not below 76 degrees ; and though the quality may be perfectly satisfactory when the barrel is first tapped, it will deteriorate with time, and the engine is sometimes blamed when the fault is properly in the gasoline. It frequently happens, also, that too little or too much gasoline or air is used, when the mixture does not vaporize properly, and trouble is sure to arise ; but when these difficulties are overcome, and experience in operation is gained, the convenience and advantages of gasoline power, either alone or as an auxiliary to sails, are many. Engines, powerful and good running, are now made in Canada, and it is no longer necessary to go to the other side for at least as reliable an engine as can be obtained there ; and the price is lower, for the duty is saved.

#### North American Fish and Game Protective Association.

As was anticipated in our last report, the meeting of the Association, which was held this year at Ottawa on the 21st and 22nd of January, was perhaps the most successful of any in its history, as to numbers in attendance, papers presented, discussions engaged in, and results accomplished ; and we do not fail to remember that not the least enjoyable part of the programme provided for the entertainment of the delegates was the magnificent banquet tendered by the sportsmen of the Ottawa Valley. The banqueting hall was artistically decorated with magnificent and rare trophies of the rod and gun. The Hon. Mr. Latchford, President of the Association, presided at the banquet, and the guest of honor was His Excellency the Governor General of Canada.

#### Land-Locked Salmon.

The Department has not yet abandoned hope of obtaining a supply of this highly-prized and popular fish for introduction into some of our inland lakes ; and having failed to procure any from our sister Province, Quebec, application has been made to one of the border States, where they are successfully propagated, an exchange being proposed for ova from our famous Nepigon trout. It would be an important and welcome addition to our game fishes, and we are convinced that the experiment would be entirely successful. A lake with a gravelly outlet and inlet should be selected, as the land-locked salmon both descends and ascends these during the spawning period.

#### Carp.

Owing to the fact that carp increases rapidly, and, it is believed, at the expense of other and better classes of fish, there has been much prejudice against it ; but carp fishing has, nevertheless, become quite an industry during the last year or two, and may yet be one of the most profitable. Large quantities have been sold at six cents



a pound, which is said to leave a handsome profit. Those who are fishing for them on an extensive scale have erected ponds, into which during the warm months, when the market is flat, the fish are placed. They are fed until the fall season, and then marketed. Friends of the carp say that its edible qualities are very much underrated, and that when properly prepared and cooked it is a most palatable fish. If salted for a few hours previous to being made ready for eating, it will lose much of its muddy or swampy flavor, and be generally improved. It has been favorably recommended by an American writer as food for bass, being a prolific breeder, and subsisting on vegetation. If it would cease to grow after attaining a length of four or five inches, perhaps too much could not be argued in its favor for this purpose, but it would be in our opinion nothing short of a calamity if these fish should be introduced into our beautiful inland lakes. So far, it is believed, they have not yet found their way there, and our bass waters have escaped their depredations. The damage to the wild rice fields is now believed to result, not wholly from the disturbance of the roots of the plant by the carp, but these fish, being granivorous as well as herbivorous in their habits, pick up the ripened grain in the water, and the seed is thus lost. We are informed that the stomach of one recently caught at the St. Clair Flats was opened, and at least a double handful of rice taken therefrom; and as an example of their destructiveness upon the spawn of other fish, it may be mentioned that a gallon of spawn, which had been devoured, was taken from an eighteen-pounder—a weight which the carp frequently attains.

#### Sturgeon.

The quantity of sturgeon taken throughout the Province shows a considerable falling off, though in certain quarters (notably Lake Nipissing) there has been an increase, the amount taken in 1903 exceeding that taken in 1902 by 62,650 pounds. The demand for sturgeon has, however, increased, and prices have been higher than in former years, the average wholesale price for the meat in the New York market having been fifteen cents per pound. The wholesale price for the roe in the same market has varied from 80 cents to \$1 per pound, according to quality, a higher price being paid for that of the best color and flavor. Our finest caviare comes from the Lake of the Woods, the roe of the sturgeon of these waters being as a rule larger than of the sturgeon of the Great Lakes. The process of making caviare is one which has to be carried on with much care, for unless the proper quantity of salt is used the whole batch may be ruined, a little too much being as disastrous as too little. The kind of salt, too, is not the least important requisite, native salt not being suitable. The German brand is that most generally, if not universally, preferred. Thirteen pounds to one hundred pounds of eggs are the proper proportions; and the keeping qualities of the caviare are said to be improved by the addition of one pound of preservative. The total output of sturgeon this year (in Ontario) was 494,250 pounds. The largest specimen reported to have been caught was that taken by a Lake Erie fisherman, which turned the scale at 190 pounds. It yielded 40 pounds of roe, and for the meat and roe he received the sum of \$50—as he said, the price of a first-class cow. But the value of the sturgeon does not end with the meat and the roe, for there is another and very valuable product manufactured from the bladders, viz., isinglass. It is used by brewers for clarifying purposes. The custom here is to save and dry the bladders, for which 40 cents per pound are realized. They are then exported to the United States, manufactured, and re-sold in this country at from \$1 to \$1.25 per pound. Until the Province assumed the administration, almost any implement of capture was permitted to be used in the taking of sturgeon, but a recent Dominion Order-in-Council prohibits their being taken with bare hooks and grappling irons, and, indeed, in any other manner than with pound and gill nets, the latter to have meshes of not less than 12 inches extension measure. Another important provision in the same Order is, that none shall be taken under four feet in length. The benefits to be derived from these regula-

tions cannot be other than salutary. The passing of this fish is an exemplification of what may be expected as the result of unrestricted capture and destruction. It was so plentiful a few years ago as to be practically of no market value, but it has decreased so rapidly as to be the highest priced of our commercial fishes.

#### Fishways.

Though the general question of the requirement of fishways in dams is, as the law at present stands, one for the consideration of the Dominion Department, instructions have been given by the Commissioner for the erection of fishways in two dams, the property of the Province, in which it was made clear that their erection was desirable and proper. The principal fact which has to be borne in mind, or ascertained, when these recommendations are made, is that a roadway will not be provided for the entrance of worthless fish into waters in which under existing conditions only choice varieties are to be found, if but in small numbers. Should such a result be likely to follow, it would be better to transplant a few pairs of parent fish from adjacent or near waters, which, with proper protection, would soon populate those above the dam.

#### Pollution From Sawdust and Other Causes.

Referring to the injurious effects of sawdust on fish life, as to which conflicting opinions are expressed by fish culturists, a writer in a recent number of "Forest and Stream" points out that one of the first difficulties which fish culturists had to overcome in the artificial propagation of trout was the deleterious effects of the fungus growth that always appeared in the troughs and boxes in which the eggs were hatched, especially where these were manufactured out of new lumber; and he makes the emphatic statement that this fungus is so deadly to the eggs that if a million were to be put into green lumber troughs, not a single egg would mature. He very pertinently remarks that if the exposed surface of a hatching trough could be the primary means of such deadly consequences, what a vaster power for injury there must be in sawdust, in which form the exposed surfaces of the wood are multiplied almost indefinitely. If his contentions are well founded, the effect of throwing tons of sawdust every year upon the spawning beds, or where it will float and lodge upon the spawning beds below, must be most disastrous. In his opinion it is this fungus alone that destroys the young fish that are exposed to it, and not that mortality occurs by the sawdust becoming fixed in the gills during inhalation, as is generally supposed. Whatever ground there may be for a difference of opinion on the subject, it is well known that fish will abandon waters, the beds of which have become covered with this refuse. The practice of lumbermen of permitting sawdust to enter the water as the most convenient and inexpensive means of getting rid of it, is in some places still persisted in, notwithstanding the very severe penalties provided for the offence. Repeated warnings have been given, and preparations in a number of cases for making other disposition of the refuse, are, we are glad to find, under way.

A number of complaints have been received during the year as to the pollution of waters by the refuse from sugar factories. The attention of the parties has been called to the subject, and a system of settling basins and filters, which it is hoped will sufficiently eliminate the deleterious matter to render it perfectly harmless, has been recommended. The subject is receiving the close attention of the Department.

#### Leases of Lakes.

Operations under the leases to the Canada Fish Company and the Manitou Fish Company, preparatory to beginning fishing, have been begun. Owing to the inaccessibility of the lakes to railway communication, there has been great difficulty in getting in material and machinery, and much time has been consumed in this work alone; but it is understood that considerable sums of money have already been expended by both companies in the construction of roads, docks, boats and scows, and in the erection of ice houses, store houses, fish houses, sleeping camps, dwelling houses, stables, stores, offices, etc., etc.

The Manitou Company has also erected, and has ready for occupation, a hatchery capable of hatching 50,000,000 eggs.

#### Close Season for Frogs.

The Department is urged to establish a close season for frogs, concurrent with the close season for bass and maskinonge, not only as a means for the better protection of the former and to prevent their extermination, which is said to be fast approaching, but for the reason also that under the pretence of spearing frogs many bass and maskinonge are taken when on the spawning beds—a fact difficult to establish where the fish are not actually found in possession. As what is suggested would impose no apparent hardship upon anyone, and as many fish would no doubt be saved, the establishment of a season covering the period from 1st April to 1st July is recommended.

#### Great Lake Fisheries.

The maintenance and preservation of our Great Lake or commercial fisheries are perhaps of primary importance to that of conserving those commonly known as the inland or sentimental fisheries. This must be done, mainly, by propagation and protection; propagation by preventing the taking of immature fish, that the greatest possible opportunity may be afforded for natural reproduction, and by largely increasing the output of our hatcheries; and protection, by exercising a vigorous policy of supervision, the requirement of a strict compliance with the laws and regulations, and the prompt prosecution and punishment of persons for violating the same. This burden cannot be assumed exclusively by the Department, for though the lakes and rivers, and the fish therein, have been declared by our Court of Final Resort to be the property of the Province, the same Court has, strange as it may appear, delegated to the Federal Government jurisdiction in many important respects over Provincial property. This jurisdiction may or may not be exercised in what the Province may consider its best interests; but, be that as it may, that is the situation as defined by the Judicial Committee of the Privy Council. While there may be every desire on the part of the separate jurisdictions to work in harmony and for the common end, the one is at any time subject to what may be termed the arbitrary view which the other may entertain, or authority which it may exercise. The Dominion has the power to enact fishery regulations and restrictions, to prescribe the times of year during which fishing may be allowed, and to stipulate the implements which may be employed for the purpose. The Province may, among other things, issue or withhold licenses; it may authorize or refuse the use of certain implements of capture which may appear to it undesirable, though such implements have not already been prohibited by Federal action; it may grant a license for one month or longer, as it may consider proper, subject, of course, to the season of prohibition established by the Federal Government; it may cancel a license before the period for which it has been issued has expired; it may refuse a license for any locality, or for any authorized implement of capture, should it consider that fishing under such license would be a detriment to the fisheries, or to the industry as engaged in by another class of fishermen with other implements of capture; it may insert in its license a condition that fish under a certain size shall be returned to the water; and it may prohibit the sale of fish for a longer or shorter period. It will, therefore, be perceived that the powers conferred on the Province by the Judgment are even greater than those upon the Dominion; and it may be said that the Province, fully recognizing that fact, and conscious of the great responsibility imposed upon it, has firmly grasped the situation, and in dealing with these various matters has discharged the duty imposed upon it fearlessly and faithfully. It has early recognized that the fishermen are each year going behind, that the yield of our Great Lakes' fisheries is annually becoming less, that we cannot shut our eyes to the fact that this is the consequent result of the excessive fishing which has been carried on for the last





On the Grand River. (Stocked waters.)





Among the "Twenty Thousand Islands" of the Georgian Bay. Renowned Bass fishing.







Lake of Bays, Muskoka. (Stocked waters.)







Mu-koka River, near Baysville. (Trout water.)



half century, and which if continued must result in their complete annihilation, and that the time has come when the question cannot longer be flirted with. It has resolved itself into this: There must be immediate intervention on the part of the two great countries which these waters unite, whose sacred duty it is to devise means, and to take steps which will prevent such a calamity—steps which will ensure to our children's children their rightful heritage; steps which, while having these objects mainly in view, must not stifle, but encourage and develop an industry by which is supplied one of our most wholesome and nutritious of foods. Speaking for this Province, we believe that it would be possible, by the union of forces, to yet establish the fisheries of these Great Lakes on a basis of permanency and increased productiveness, one not only in perfect harmony with the public interests, but with the interests of those engaged in the industry. As was announced in the last report, the attention of the border States has already been invited to the matter. Interviews between the Commissioners of the State of Michigan and Ohio and the Deputy Commissioner took place in Detroit in the month of October, and arrangements were completed for a general conference of representatives from all the States. A date in December was subsequently fixed for this meeting, but it was ultimately ascertained that a full attendance could not be obtained at the time named, in consequence of some of the Commissioners having peremptory engagements elsewhere. A postponement until a date in March was therefore, decided upon. It is gratifying to be able to announce that all of the States, without a single exception, have indicated an intense interest in the subject, and a full representation is expected. The adequate machinery can only be secured by the co-operation of the jurisdictions interested. Many discouragements will no doubt be met with before what is aimed at will be accomplished. But if proceeded with energetically and judiciously, success will ultimately reward our efforts. It will certainly not be the fault of those immediately having to do with the administration if failure results. The first sod has been turned, so to speak.

#### The Biological Station in the Georgian Bay.

Dr. B. A. Bensley of Toronto University reports as follows:

Our first efforts last season were directed towards the observation of the spawning habits of the small and large mouthed bass. The season was well advanced at the time of the first observations (May 25th), but the shores of the shallow swamps and inlets were lined with the characteristic excavations or nests occurring in from one to three or four feet of water. A large number of the nests belonged to the Rock Bass (*Ambloplites*), and some to Sunfish.

We attempted to hatch and rear samples of the eggs, but the experiment was unsuccessful, apparently because we had not available a sufficient supply of running water. Later in the season an efficient aquarium table and a pumping engine were installed, so that this difficulty will not recur.

During the remainder of the season we collected the young of the game and other fishes for the purpose of discovering the kind of food taken by them at different stages of growth. In connection with this we made a very extensive collection of the microscopic germs of the water, which constitute the first food of the young fish. These collections were made by means of silk nets, towed periodically on the surface and deep at eight stations passing from the open water of Georgian Bay to the first falls on the Go-Home River.

The collection for purposes of classification of the fishes in general, begun last year, was practically completed. Our best thanks are due your Department for the privilege of operating certain nets for this purpose.

With reference to the preservation of the game fishes of Georgian Bay, I would like to point out the probability that the close season is not sufficiently inclusive. Small-mouthed Bass were observed on the spawning beds towards the end of June, and our caretaker, an experienced fisherman, states that this is not exceptional.



You are probably aware that the supply of Pickerel (Dore) is rapidly becoming depleted. It is alleged that this is owing not to the enthusiasm of the tourist, but to illegal fishing, especially during the spring run to the rivers. It is interesting to compare in this connection the relative abundance of Bass with the paucity of Pickerel. The former appear to seek the shallow places in any locality, so that they do not congregate to any great extent at the spawning period in particular places. Moreover, they possess sufficient cleverness to escape from traps. But although they are thus naturally protected, the main reason for their abundance is to be sought in another way. Some years ago your Government justly prohibited the sale of Bass, establishing thereby their correct status as game fishes only. The wisdom of this provision has already made itself apparent. The question now is whether the Pickerel are any less deserving of additional protection from the same standpoint. The difference in gaminess of the two species is well known, but this does not determine their relative value. In Muskoka Lake, where, notwithstanding the advanced state of depletion, the conditions are more normal than in the Georgian Bay, the pickerel are much more staple fishes from the tourists' and cottagers' standpoint than the other.

It might be urged that the prohibition of the sale of Pickerel would be a hardship to certain fishermen, but these fish never have been and cannot be regarded as general food fishes, such as the whitefish and herring, and a fishery based or dependent on them is unnatural, and would be better abandoned. The region of the Georgian Bay can have no great value to the fishermen unless the whitefish and herring fishery is productive. On the other hand, it is becoming more and more valuable as a tourist resort, and its value is greatly enhanced by the presence of game fishes. The latter should be, therefore, strictly protected for this purpose, and their depletion from other sources prevented.

#### Destroying Coarse Fish.

The work of destroying pike and other coarse fish in the Nepigon has been continued, and thousands were destroyed during the summer; tons of ling and suckers have been taken by hoopnet fishermen in eastern Ontario, and a marked improvement in the game fish will soon be manifested.

#### Legislation.

The legislation extending the prohibition of the sale of speckled trout, bass and maskinonge for a further period of three years has been universally approved.

#### Specimens.

A few additional specimens have been added to the collection of mounted fish.

#### Acknowledgments.

The Department desires to express its appreciation of the courtesies extended and the assistance rendered by the Chief Warden of the State of Michigan, the Hon. Mr. Chapman, to the Deputy Commissioner during visits to Detroit on public business ;

And also by the railway companies, for without their co-operation it is needless to say but little progress could have been made with the work of transplanting fish.

#### Reports.

The reports of the overseers which follow contain much information not contained in the statistical tables, and they are, therefore, commended to the perusal of those desiring a fuller knowledge of the condition and nature of the fisheries than the tables impart.

In conclusion, it may be superfluous to add that the work of the Department is steadily growing as its field of usefulness increases, and as its operations are extended ; and that, having regard to the important and extensive duties to be performed, the expenditure has been as economical as possible.

All of which is respectfully submitted.

S. T. BASTEDO,

Deputy Commissioner.

## OVERSEERS' REPORTS.

J. C. Judd, District Overseer, Morton, reports that the district under his supervision embraces over 600 lakes, with such a variety of attractiveness and diversity of features that it is almost inconceivable. He says it is doubtful if any territory in the world having the same area can be found containing sublimer scenery, better fishing, and within easier access, a territory "where civilization has made its way and yet not marred the beauty of nature," where possibility is beyond the dream of the ambitious angler.

There has been within the last few years a wonderful awakening of interest on the part of the people, and a large increase in the number of summer visitors. The attention which your Department is giving to the matter of protection is much appreciated.

During the past season special effort has been made to interview boatmen and tourists, and to impress them with the fact that the returning to the water every black bass caught would soon develop better fishing, and increase the small-mouth bass which they desire, much more rapidly than the stocking by your officers, and it is gratifying to know that in many lakes on the Rideau this idea was carefully and willingly observed. One hundred black bass are said to have been caught in one day by four tourists and not one bass killed. Further, it was suggested that if this was brought to the attention of tourists as a special request by way of notices distributed at the hotels, it would do much good. There is a desire on the part of boatmen and anglers to further limit the number of catch and increase the regulation size of bass. Many catch and kill to the limit, and occasionally to excess, yet it is thought that a lessening of limit will be adhered to quite as well, and that the interested feeling of tourists in retaining good fishing is such that the great majority of them will forego an excessive catch. Last season the tourists were in harmony with the above, and were ready and willing to call the attention of the overseers to such, and even to infractions. These are certainly encouraging features.

Licenses. As mentioned in a former report, the issuing of licenses ought to depend upon the condition of lakes. Where it is known that the catch of bullheads is very small, hoopnet licenses ought not to be granted.

The "Eva Bell." The patrol boat "Eva Bell" in the spring had a thorough overhauling. The old boiler was replaced with a new one, and some of the timbers and planking were also renewed. She was carefully inspected by the Government inspectors at Kingston, a certificate of which she carries on board, and has given good satisfaction during the year. Perhaps the best evidence which can be given as to her importance on this chain of lakes is to state the fact that, after the close of the season when she had to make for port in consequence of ice taking, there have been some twenty-five convictions for illegal net fishing, while during her patrol no such infractions were heard of. Her former master during the summer resigned to accept a more lucrative position, but his place was taken by Mr. John Roddick, who will make a courteous, careful and vigilant officer, as evidenced by the fact that he seized a number of nets during the early part of the fall. He would recommend that a boathouse be built for the boat at Jones' Falls, midway in her patrol, and where coal may be safely kept, and where she could be hauled out for winter.

Anglers' Associations: Your recognition of anglers' associations is another encouraging feature, and attention is again called to the importance of these associations. Their formation will eventually be the solution of the problem of protection. Every year furnishes further evidence of this fact.

These associations, like all others, can only be properly organized and kept active under the supervision of an officer, who is constantly in touch with them.

As a District Overseer, he has found a ready response towards organization, and without friction in our ideas as to what is required for their localities, and he is the recipient of questions frequently submitted which are weighed together, and always with the best possible feeling.

District Overseer Lamarsh, Wheatley, reports that he has been over his district several times, and reported to the department as to complaints made, etc.

He is sorry to again report a continued decrease in the catch of herring in Lake Erie; in fact there has been a general decrease in most kinds of fish caught the past year. The herring, the most valuable fish in Lake Erie, show a continuous decrease since 1899, and the fishermen are becoming fearful that the continuation of gill net fishing by tugs in the head of Lake Erie, and poaching by the Americans in Canadian waters will very shortly have the herring all but extinguished in Lake Erie. Already many of the pound net fishermen are considering whether it is worth while to take out licenses again. If the Department cannot devise some method or policy to preserve the herring fisheries in Lake Erie, they must look out for a tremendous falling off in the revenue from that source, and as very nearly one-half the whole revenue of the Department comes from the fisheries on Lake Erie, the Department should have a great concern in their preservation. From his observation of the gill net fishing he is convinced that it is a mistake to permit gill netting for herring in the fall, as most of the fish caught are spawn herring, and it only stands to reason that if you destroy the parent fish while in the act of reproduction it will not be long before the species will become utterly extinct.

The Department has made regulations for the preservation and propagation of black bass, and other kinds of fish. Yet in the face of the continuous decrease in catch of herring during the past five years, nothing has been done for the protection of the herring fisheries by withholding privileges which are destructive to parent fish, or making regulations for the protection of the herring.

The very early set in of winter, which started about the middle of November, again caught a number of nets in the ice between Point Pelee and the Detroit River, some losing all their nets, stakes, etc.

He is still of the opinion that it would be in the interest of the fishermen and protection of the fish, if the Department could have all fishing suspended by the 20th of November each fall.

From fishermen and others along the shore from Point Pelee to Port Stanley, he learns that the Americans enjoyed about two months good fishing, from early in March to the first of May, in Ontario waters, without molestation. The lake opened early in March, and navigation began about the 10th. The Dominion G. S. Petrel did not get down from Upper Lakes till the first of May, with the result that American tugs were scattered all along our shore, fishing. The Petrel should go into commission here as soon as navigation opens, which is usually early in March.

Complaints come from some of the fishermen in Lake Huron of damages to nets by rafts of logs, and he thinks some additional legislation necessary for the protection of the fisheries from such causes.

He would say in conclusion that, while there has been a great decrease in catch of fish, that the prices have increased greatly, which has in some measure compensated for decrease in catch; although those who depend on the Herring principally actually lost money in the season's operation.

The price of fish has risen so high that good fish has become a luxury, instead of food for the masses.

District Overseer McCargar reports that the fishermen had hard luck during the spring in the Bay of Quinte, Weller's Bay, Consecon Lake, and the Trent River sections. There was but a small catch of bull heads in all the above places, both spring and fall. The water was so high that the fish kept in the marshes, and during the fall it was



so low that the nets were partly out of the water. This, however, applied more to Consecon Lake and the Trent River. The angling was not so good in any of the waters mentioned above, on account of the high water and the high winds, and he thinks the abundance of young shad in the Bay of Quinte had a lot to do with the bad angling. They had plenty of bass, but they would not take the bait, there being a glut of natural food. He thinks the Ontario Government should extend the work of stocking lakes where there are no fish, and re-stocking some that have been fished out, and that the small inland lakes should not be overlooked. A number of natural hatcheries could be started along the Bay of Quinte at a very small expense. There are a few coves where they could be built cheap. The water would be the same as the bay water. The parent bass could be put in the enclosure in the spring, but removed after spawning. The fry could be left until from three to five months old, and then let loose. They would then be able to look out for themselves. The fishermen, he says, along the Bay of Quinte observed the law fairly well. He seized a few gill nets in the bay, below Deseronto, and destroyed them. A quantity of bass about five months old were put in the Bay from the bass ponds this fall. A hatchery should also be started on the Trent River above Healy's Falls. There could be one built at a small cost on Mr. R. Keller's place. The parent bass could be easily secured, and the C. P. R. and G. T. R. stations being only about six miles away, they could be conveniently shipped. He thinks spring fishing should not be allowed in the Trent River or between Peterboro and the St. Lawrence River. The spring is the time when most of the fish in these waters spawn; and they should not be disturbed. Fishing with hoop nets, in the fall of the year, will help the game fishing rather than hurt it. The black bass are a very hard fish to catch in a hoop net. They will not lead except in the spring, near spawning time. By stopping spring fishing, it would protect not only the game fish, but pickerel, which is a fine food fish.

The fishermen observed the law only fairly well. He had to fine two men in Prince Edward County, one for shipping black bass, and the other for refusing to show from whom he bought fish. In each case a fine of \$10 was imposed. He seized three gill nets below Deseronto, and burnt them up. He also seized a quantity of hoop nets at the west end of Weller's Bay, and has them yet for sale. He also seized a night line in the Trent River, and one in Hogg Lake.

District Overseer Pratt, Penetang, reports that fish of all kinds, except Pickerel, are very much on the increase. Game fish, he is fully convinced, have not been so plentiful for years, Whitefish about normal, Trout in greatly increased numbers, with a more than corresponding increase in size, Pickerel much less than average, and for the first time he reports German Carp as taking a distinct place in the fish of the Georgian Bay. As yet they are practically limited to shallow water from Waubauskene to McRae's Bay, and as considerable apprehension exists as to the ultimate results of the influx of this fish, he has given the subject some study, with the result that so far there does not appear any good reason for believing that they will prove destructive to any but a low grade of fish, or, in other words, fish that frequent the same kind of water, viz., shallow, reedy bays, such as pike, suckers, green bass, etc. They will, however, multiply very fast, and may eventually destroy feeding grounds of better fish.

Tourists, notwithstanding the unfavorable weather, were in much larger numbers, and it is a certainty that each recurring season will see them in continually increasing numbers. Much more pretentious houses, both hotel, club and private houses, are being built, and catering to the tourist fraternity, especially in providing good fishing for them, is, he believes, the largest factor to be taken into consideration in making and carrying out fishing regulations. Of course he does not wish to be understood as referring to anywhere but his own district.

Tourists are observing fishery regulations much better than formerly, although the fishing hog is still with us, and he must, at the risk of being considered importunate, reiterate his recommendation of last year that a synopsis of the law be placarded freely.

Illegal fishing by fishermen is not abating, in fact it would be, on the increase if it were not for the fact that fewer are engaged in it, due to high wages for unskilled labor in other occupations.

The reason for the increased tendency to fish illegally, especially trap netting, is better facilities, such as gasoline power, etc., while at the same time provisions for coping with it have not kept pace, in fact they are wholly inadequate for the purpose.

Regarding his own operations, practically nothing was done until June 1st, when he received a telegram to proceed with his man to Little Current to take over the sailing cruiser "Maud," at that time in charge of Overseer Oliver. He did so, and continued to use her in his district until the close of navigation. He found the "Maud" to be a staunch and seaworthy craft, but unhandy for cruising purposes. He would recommend that she be dismasted and furnished with gasoline power.

As gasoline is now in general use for power, he can see no reason why fishermen in the Georgian Bay should be placed under an embargo by being prohibited from using it under license; they will use it in any event, and an increased revenue may as well be derived from it.

District Overseer Thwaite, Oshawa, reports that the local Overseers have performed their duties faithfully, considering the amount of remuneration they receive. He thinks if the Department would impose a license fee of \$5 per rod for the season for all non-residents of the Province, the extra revenue derived therefrom would enable the Department to be more liberal with the local overseers, thereby securing more efficient service. The fishing season on Lakes Simcoe and Couchiching has been a most successful one. The anglers all report satisfactory catches. The work of restocking the lakes with the gamey Black Bass is a very popular work, and the people are looking forward to good results. Stony Lake still continues to attract large numbers of tourists from the American side, who fish incessantly from early morn till late at night. He thinks a license fee of \$5.00 for the season should be charged these parties, and does not believe it would deter one in a hundred from visiting the lake. Stony Lake is a favorite resort for tourists from all over the Dominion, as well as the United States. There are some two hundred cottages erected on the various islands in the lake, some on a most elaborate scale. The fishing has been all that could be desired. He again urges the desirability of placing fishways in the dams on the Indian River.

The catch of Maskinonge and Bass in Rice Lake has been very good during the past season. The licensed fishermen on the lake are also well pleased with their catch of Mudcat and other coarse fish. Lake Scugog is noted for good Bass and Maskinonge fishing, several Maskinonge were caught weighing over 20 lbs. each. He is glad to say that the catch this season has been satisfactory to the numerous tourists who visit its shores.

The Dominion Government contemplate building a concrete dam on Scugog River at Lindsay, and he recommends that a modern fishway be placed in it.

He also recommends that the close season should be from 1st December till the 1st of July, and that some protection be given frogs, or they will soon be a thing of the past. He is of the opinion that the number of Bass and Maskinonge to be caught in one day should not exceed 2 Maskinonge and 8 Bass, and that no Bass measuring less than 12 in. long should be kept out of the water. He would urge that the use of spears be absolutely prohibited, for they are the principal cause of the destruction of Lunges during the spawning season. The dumping of saw mill refuse in the rivers and lakes has entirely ceased.

Overseer Allan, Wallaceburg, reports that the angling in his division has been all that could be desired. The anglers who visited this locality are loud in the praise of the sport that this locality affords. One in particular told him that he had angled in all parts of Georgian Bay, and in a great many of the angling waters of the United States,

and says that he has found nothing to equal the waters of Lake St. Clair; the fish are gamey, and the surroundings are pleasant and easy of access. A serious difficulty they have to contend with is the angler who fishes for the market; he of course comes as a tourist and takes out a permit to angle in Canadian waters, and is on the waters at 5 o'clock in the morning, and stays out all day long, rain or shine, catches all he can, puts them in ponds and keeps them alive until he gets sufficient quantity to ship; he then sends them to Detroit or Mt. Clemens by steamboat, and they are there sold to the large hotels at a good price, and the proceeds are used to defray the expenses of this so-called sportsman. The months of September and October are the best months for Bass fishing if the weather is warm. There were a few new anglers, too, in that locality during the year, but they did not remain long on account of the weather being so rough and wet at that time.

The Johnson and the Bassett are said by the anglers to be the best waters they know of. The Bass are on the increase throughout his division. There was a large increase in the catch of the different kinds of fish over the previous year, 90 per cent. of the total catch is exported and 10 per cent. is used for home consumption. The close season and other regulations of the Department were well observed, no cases of illegal fishing having come to his notice.

There is no mill refuse allowed to run into the river, and there are no fishways, in his division.

He recommends that no spring fishing with nets be allowed, and that the season in the fall be changed from 1st October to the 1st September. This, he says, would be satisfactory to the fishermen, also to the public generally.

Overseer Armstrong, New Liskeard, reports that there were eight licenses issued in his district during the year 1904, which were for local and domestic purposes only. With the exception of fishing done by Indians in some of the remote small lakes, the fishery laws were fairly well observed.

The district is fast becoming popular as a resort for tourists, there being good Bass and Speck'd Trout fishing in Lake Temagami, and other small lakes on the Montreal River.

There are very few game fish in Lake Temiscamingue, with the exception of Bass and Maskinonge; the former are only found at the lower end of the lake. Other kinds, such as Pike, Pickerel, Shad, Herring, Whitefish, Sturgeon, Channel Cat, and Eel are plentiful; the Whitefish and Herring are reported to be of excellent quality.

He understands that the Province of Quebec has issued licenses to export fish from Lake Temiscamingue to the U.S.A., and thinks it might be well for the Department to consider the advisability of issuing licenses for export also.

He regrets to say that the local saw-mill owners are still disregarding the act respecting sawdust, and are allowing it to be carried into the lake by high water in the spring and fall. More stringent steps will have to be taken to stop this violation of the act in order to protect the fish.

Overseer Barr, Renfrew, reports that there has been a slight decrease in the catch compared with that of last year, owing to a less vigorous prosecution of the fishing by the licensees.

No fish were exported, the entire catch being used for home consumption. No violations of the close season or other regulations of the Department came to his notice. In many cases the mill owners still allow the refuse from the mills to run into the streams. There are no fishways in the district. A few tourists visited his district during the past season, mostly from Philadelphia. The Bass and Maskinonge fishing in Chats Lake was excellent, and good Speckled Trout fishing was had in the head waters of the Bonnechere and Petewawa.



Overseer Bailey, Callander, reports that there has been no net fishing in his district.

The close seasons and other regulations were well observed. No complaints of illegal fishing have come to his notice. The angling for Bass and other game fish has not been as good the past three seasons as formerly; he cannot account for it.

There has been some good Brook Trout fishing in some of the streams in the near neighborhood.

The lake is becoming more popular every year as a summer resort, and the many tourists who visit its shore are rapidly taking up the desirable islands.

Overseer Baechler, Nipissing, reports that there does not appear to be any noticeable increase in the number of Black Bass, Maskinonge or Speckled Trout. At the opening of the season in June and for a couple of months afterwards, there is good fishing for Bass with rod and troll, but during the latter part of the tourist season they appear to vacate the main shores and are only found in quantities among the islands some miles out. There are no Speckled Trout in the large lakes, some are found in the South River, above the shutes, but in ever decreasing numbers. He would advise the placing of Trout fry in the river, as the large number of logs that used to pass down the river is a thing of the past. The Trout would not have to contend against the pollution of the waters such as then existed. There are not very many Maskinonge; occasionally a very large one is caught. They seem to be more plentiful towards and in the French River. He mentions that inhabiting the small inland lakes some few miles from the large lake, are innumerable Black Bass of a small size, weighing up to a pound, and in equally large numbers are the Silver or Widemouth Bass, but they do not seem to grow to the large size obtained in the large lake.

As there were no licenses issued in his division he cannot furnish any data as to the value and quantity of fish caught during the year. There are myriads of Pike and Pickerel in the spring, and some Whitefish and Herring are caught in the fall. During this past summer the number of tourists increased considerably. Some 34 members of the Keystone Camping Club, Pittsburg, made their first visit to the mouth of South River, and were so pleased with their location that they intend bringing some hundred more members of their club next year. In concluding, he says that there are no fish-ways on the shutes on South River. In the first falls encountered in their passage up-river the fish are stopped. If they could master this chute they could easily ascend a long way up stream.

Overseer Geo. Bilton, Rideau Waters, reports a slight decrease in the catch, owing to the fact that there were about one-third fewer licenses issued this year than in former years. There has been an increase in the catch of Pike, also of Catfish, which he thinks goes to show that the waters are not being over-fished with hoop nets. In Upper Rideau Lake, Wolf Lake and Otter Lake, the Ling are becoming more numerous every year, and he would suggest that some means be devised to exterminate them, as they are very destructive to all other fish. The Bass fishing has been first-class. The tourists who frequent the waters are well pleased with the sport afforded; and say that the Rideau waters furnish the best Bass fishing they have found in their travels. A large club house is being erected on Mud Lake for the accommodation of the ever-increasing tourist trade. He would recommend that the close season for Salmon-Trout on the Lower Rideau River be changed to the month of October, that being the month in which they spawn. If the season were changed to that month he is of the opinion that it would be a great protection, as at present there are a great number of people who troll during that time, and most of the fish taken are filled with ripe spawn. The close season for Bass he says was well observed, but there were some flagrant violations of the law in fishing for trout and whitefish during the fall close season. He had thirteen parties summoned and convicted, a fine being imposed of ten dollars in each case.

Overseer Blondin, Cornwall, reports that there has been no net fishing; only angling. The angling has, however, been unusually good. Fish have been plentiful, especially

pickerel. One man, whose business is to guide tourists, reports 1,250 lbs. caught. Another man who follows a similar occupation reports a catch of over 700 lbs. of pickerel and other fish, such as pike and perch. There has been an increase in the catch of Maskinonge. An Indian reports a catch of 27, and in all a catch of about 70 Maskinonge has come to his notice, having been caught by different men. All the fish caught are for home consumption.

There has been a great number of tourists, and the district seems to be becoming more popular every year as a summer resort.

No illegal fishing came to his notice, the close seasons have been well observed. There are no fishways in his division.

Overseer Bowerman, Port Perry, reports that the fishing has not been as good as the previous year, owing to the very low water; this is a very serious drawback to the angling, on account of the great quantities of weeds exposed.

He suggests that winter fishing through the ice be prohibited, and that the close season should be from 1st December to 1st of June.

The laws and regulations of the Department were well observed.

Overseer Brady, Lindsay, reports that maskinonge and bass were not as plentiful as in former years, although much larger in size. Two-thirds of the fish taken are used for home consumption and one-third is taken by the tourists to points in Ontario and United States. A very large number of tourists from the United States visited that locality this year.

With the exception of a few old offenders who were fined for fishing during the close season, the law was well observed. During the year he confiscated four snares, five spears, one jack-light, and one canoe, all of which he destroyed. There is only one fishway in his division, and it is in good repair. He would recommend a close season for frogs, from the 1st of November to the 15th of July, as in the fall and spring of the year the frog lamp is used by poachers instead of a jacklight to spear fish, and no doubt a great many Maskinonge are killed. Besides this, ducks will not remain to hatch where they are continually disturbed at night by the frog lamp. He also recommends a close season for Maskinonge and Bass from the 1st of December to the 1st of June, or as long as Bass are allowed to be taken through the ice with bait it will be impossible to protect the Maskinonge from being snared.

Overseer Brown, Baysville, reports that the Speckled Trout fishing in the river has been excellent, and that in the Lake of Bays the angling for Lake Trout has been all that could be desired. The Black Bass that were planted in the lake by the Department, he says, are doing well. Several parties have reported having seen large quantities of the young fry in different parts of the lake. The settlers are fully alive to the importance of protecting this fish, as they realize that it is the ideal fish from a tourist's point of view, as it can be taken any time of the year, and are as gamey as any fish that swims. The close season and other regulations were well observed; no cases of illegal fishing came to his notice.

Overseer Brown, Rockdale, reports the catch of this season to be lighter than that of former years. Maskinonge and Bass are on the increase in the lakes, and Speckled Trout in the creeks are reported as plentiful.

A large number of tourists visited the district during the season, and were pleased with their catch, and some are erecting cottages.

The close seasons were well observed, and no cases of illegal fishing came under his observation.

Overseer Cattanach, Wolfe Island, reports that the Bass fishing during the recent season was largely in excess of that of former years. The district is becoming a very popular summer resort, and the class of people who visit the locality are such as they are very sorry to part with and pleased to meet again. The anglers express

themselves as satisfied with the fishery regulations and the general enforcement of the laws. He is of the opinion that those who come from year to year spending their vacation should be dealt with most leniently. In consequence of the late opening in the spring, the catch of the licensed fishermen was not as large as in former seasons, the spring fishing being fully two weeks shorter. The fall fishing for Bullheads, however, has been prosperous, which makes the average catch for the season a fair one. He had but very little trouble with the tourists, there being a general disposition on their part to respect the laws, when made fully known to them.

Overseer Clyde, Cataragui, reports that there has been a decrease in the catch of Pike, but an increase in the catch of Perch and Catfish. In the Rideau Canal there is an abundance of Dogfish, which are very destructive to the spawn of game fish. He has instructed the fishermen to destroy all Ling they find in their nets. The close seasons have been fairly well observed. A few cases of illegal fishing came to his notice, in each case the parties being fined according to law. He confiscated no fishing gear of any kind. He is of opinion that no Bass measuring less than 12 inches should be taken, and also that resident settlers who fish for domestic purposes should have 100 yards of nets, and be charged a fee of \$2 each.

There are no Speckled Trout in his division, but Bass and Maskinonge fishing cannot be excelled. The district under his supervision has become popular as a resort for tourists, especially Loughborough, Dog, and Cranberry Lakes.

Overseer Clunis, Claude P.O., reports that the Trout fishing in his division was not quite up to the catch of last year. So many of the tributaries of the Credit River are being leased by private parties that the waters open for angling to the public are very limited. This, he thinks, fully accounts for the shortage in the catch.

No cases of illegal fishing came to his notice. The close season he reports as being well observed. There was no mill refuse allowed to pass into the stream in his division. All other regulations were well observed.

He reports a large number of tourists at the Caledon Club during the year.

Overseer Couseneau, Windsor, reports that the fishing operations this year in the waters under his supervision were not so good, from the standpoint of quantity of fish taken, as in the season of 1902, but from a financial standpoint it was a more successful season, owing to the increased price received for German Carp and other coarse fish. The catch of Whitefish for some unaccountable reason was a complete failure, the fish apparently not leaving the lake for the river during the fine weather in the fall season. The fishermen did not derive any material benefit from the abolition of the Whitefish close season, owing to the winter setting in so early in November.

Overseer Craig, Glenburnie, reports that the catch of fish for 1903 was not so good as in 1902, Catfish being much below the average, while Pike and Coarse fish were about the same as in the past. Prices were good, which helped the fishermen very much. The catch of Herring was up to the average. They are still very numerous, and average much larger than formerly. All the Herring licensees were well satisfied with their catch.

Tourists are still increasing, coming and going during all of the angling season; many of them camped on Bob's Lake and Green Bay. Bass fishing was better than for many years. The lakes are becoming cleared of Ling by hoopnets; tons of them were taken and destroyed during the year. In 14 Island Lake, where hoopnet fishing was prohibited, the Ling are increasing very fast, and Bass fishing has not been so good as in former years. There is still a good demand for fish from the United States. The home demand is increasing yearly.

The number of Bass tourists should be allowed to kill in one day should be reduced to eight, and the lengths increased to eleven or twelve inches.

Several fine cottages were built on some of the lakes last summer, which added much to their beauty.



The laws and regulations were fairly well observed. He destroyed two hoopnets, three gill nets, and a number of nightlines, which were unlicensed.

Overseer Crotty, Bothwell, reports that the catch in his division was about the same as in former years, and that all were used for home consumption. No abuses came to his knowledge. The close seasons were strictly observed. There are no dams or fishways in his division.

Overseer Driscoll, Howe Island, reports an increase in the catch, and that the fish were of a better quality than in former years. A great number of tourists visited his district during the year, and they all report excellent sport. The laws and regulations of the Department were well observed. No cases of illegal fishing came to his notice.

Overseer Dickson, Westwood, reports that the tourists who visited the lake during the season were well pleased with the catch, all kinds of game fish, such as Bass and Lunge, being very plentiful. The lake is a favorite resort for tourists, who are becoming more numerous every year.

Overseer Duchesne, Treadville, reports that he has found very little change in the condition of the fisheries in his division from that of previous years. The laws and regulations of the Department were well observed. The angling for Bass and Pickerel has been first-class, and the anglers appreciate the efforts that have been put forth to enforce the laws; they realize the importance of protecting these valuable fish. The fish caught by the licensed fishermen are all used for home consumption, none being exported. There are several sawmills in his division, but the owners are careful that the refuse does not run into the water. Taking all things into consideration, he found everything from the fishing standpoint in a very satisfactory condition.

Overseer Free, Byng Inlet, reports that the close season and other regulations of the Department were well observed. Several cases of illegal fishing with trapnets came to his notice, and in each case the net was confiscated, but the parties fishing then could not be found. The angling has been first class. Bass and Pickerel fishing has been better than he has known for the past ten years. Quite a number of tourists visited the locality during the season, and they were all well pleased with the catch.

Overseer Flynn, Mountain Grove, reports that the licensed fishermen in his division were unable to supply the local demand for fish, consequently a larger portion of the fish caught were sold in that locality than heretofore. The number of tourists visiting his district is increasing every year, and are well satisfied with the sport afforded. Some who were there two years ago notice a decided improvement, both in the quantity and size of the fish caught. In the waters where hoopnet fishing has been permitted for several years past there is a very noticeable increase in the quantity and quality of the game fish taken. Ling have been caught in great quantities by the nets. This is a noxious fish, and it is well that the waters should be rid of it.

The spring fishing for Pike and Suckers was very successful; many Ling were also destroyed. The settlers are taking much more interest in the protection of game fish than formerly. They realize the importance of the tourist trade to the locality. He reports having secured four convictions for illegal fishing, a fine of \$10 and costs being imposed in each case; also that four parties were allowed to go on suspended sentence. On the whole, the laws and regulations of the Department are fairly well observed. He recommends that a bonus be paid to the fishermen for destroying Ling.

Overseer Freeman, Northumberland County, reports that the fishing in his division has been about the same as last year, although his returns show that there has been a less quantity taken. He says it is owing to a less vigorous prosecution of the fishing by fishermen, some of them not fishing more than half of their time. The bay fishing, according to the time spent in active fishing, shows much better results than the year previous, the principal fish taken being Pike, Bullheads, Pearch, and Rock

Bass. These fish are taken in large quantities; one fisherman alone caught three hundred dollars' worth of Bullheads in three weeks.

Not many tourists visit the locality, although it has the best angling waters along the shore of Lake Ontario, and the magnificent scenery and camping grounds cannot be excelled in the whole Province.

There are no fishways in his division. No mill refuse has been allowed by the millowners to run into the water. The close seasons and other regulations of the Department have been well observed.

Overseer Gardner, McDonald's Corners, reports that the Bass fishing in his division is very good, but that the district is situated in such a way that it is hard to get at it; still, they were visited by a few tourists during the past season, who were well satisfied with the sport afforded. The laws and regulations of the Department are well observed.

Overseer Gerow, Port Perry, reports that owing to the very low water in Lake Scugog during the year the Maskinonge fishing was not quite so good as in former years, but that the Bass fishing was better than it had been for some years. This, he thinks, is owing to the fact that there were not the usual quantity caught through the ice during the winter. He recommends that all winter fishing be stopped. The different close seasons were well observed. No cases of illegal fishing came to his knowledge.

Overseer Gibson, Strathroy, reports that the Bass planted by the Department in his district are doing well; the stream has been set apart for a term of years, and the local anglers are looking forward with a great deal of pleasure to the time when they can try their luck with the finny tribe.

The laws and regulations have been well observed. There is no mill refuse allowed to run into the water in his division.

Overseer Gillespie, Campbellford, reports that the close season has been generally observed; very few complaints were made, and no violations came to his notice, except in one or two cases of spearing. He visited the places where spearing was said to be going on, and is pleased to say that his visit had a good effect, and stopped it to a great extent. The hoopnet fishing has been very poor, especially in the waters between Percy Boom and Chisholm Dam. He accounts for the scarcity of Bullheads, or Catfish, in that section from the water having been drawn off the drowned lands above Chisholm Dam before the small fry had a chance to reach deep waters, being left in pond holes or shallow creeks, where the waters becoming stagnant during the summer months they die. He is afraid that fishing will be poor until Chisholm Dam is rebuilt; there is about two-thirds of the dam gone at the present time. From Healey's Dam down to the foot of Rice Lake the fishing has not been up to former years, and he thinks that if no license were granted in the spring for a few years the fishing would be very much improved. Angling during the open season for Bass and Lunge on the whole has not been as good as former years from Healey's Dam to Hastings. He visited the different summer resorts to ascertain the cause for this, and the reason given him was that the water was kept so high at Healey's Dam that the Bass and Lunge did not take to the deep waters, but remained among the reeds, where there was plenty of feed. In his opinion there are as many, if not more, game fish in these waters as in former years, but on account of the waters being kept so much higher, the fish have more territory to roam over.

Overseer Gibson, Mallorytown, reports that the territory allotted to him on the St. Lawrence River is entirely within the limits of the International Park. In the arrangements for this park the Americans had everything to gain and the Canadians everything to lose.

The angling in the river, he regrets to report, has not been up to the average, for Bass and Pike especially. He has given his district close supervision during the past

two years. He seized and confiscated a number of gill nets during the season, and in almost every case they were, in his opinion, the property of Americans.

Some little difficulty was experienced with parties from the United States using seines for catching Minnows, and although no seizures were made, he succeeded in checking the practice. He apprehends, however, that this will be repeated next year during the tourist season unless the river be carefully guarded.

There was no dynamiting in his district, and the law respecting the pollution of waters was strictly adhered to. There are no fishways. Much difficulty is experienced in getting returns of the catch from fishermen at the end of the season, and he would recommend that an additional charge of \$1 be made in each license, and that such amount be refunded at the end of the year on receipt of the return of fish taken.

He would recommend that the limit for a catch of Bass for one day be made six, and none taken under a length of twelve inches, and that a close season for Pike be made the same as for Bass, and that spearing and shooting of Pike in the spring on the marsh should be stopped, or in a few years the St. Lawrence River will be cleared of that kind of fish.

The Maskinonge fishing in the river is becoming very popular in the months of October and November. The tourists have had good success, and report large catches. This is a growing fad, and has only been taken up in the last two years.

Overseer Goulette, Gananoque, reports that the Bass fishing has been very good, but in size the Bass are much smaller than usual, which arises probably from over-fishing. A great many American tourists visited the district during the season, and were well pleased with their catch. Pike or Pickerel have been very plentiful.

All the fish caught by the licensed fishermen in the back lakes were exported to the United States. The catch of coarse fish was fully as good as in former years. The close seasons and other regulations of the Department have been well observed, only one case of illegal fishing having come to his notice.

Overseer Graham, Fenelon Falls, reports that as far as he could learn the catch of fish in his division was about the same as last year.

There have been no complaints made to him, either directly or indirectly, of illegal fishing, and no cases have come under his personal observation.

The Kawartha chain of lakes is fast becoming popular as a summer resort, especially in the vicinity of Fenelon Falls, and the tourists who visit the waters are all well pleased with the sport afforded.

Overseer Hadgraft, Port Dalhousie, reports that the season has been very unsuccessful one. The fishing for Herring and Perch was very poor all spring and summer. In the latter part of October and November the Herrings are generally along that shore in large quantities, but this year they were not nearly so plentiful as in former years, and the very rough weather that prevailed prevented the fishermen from getting but a very few lifts before the run was over. The large price that was paid by the American buyers partly made up for the failure in the catch, three and four cents per pound being paid for Herring in the rough. One tug secured as high as two hundred and fifty dollars for one lift.

The angling on the grass beds at 15 and 16 Mile Pond was better than last year, owing largely to the appointment of two overseer on the spot to protect the interest of the angler.

The angling for Perch at Port Dalhousie was very good, while there was a notable falling off in the number of Pickerel and White Bass caught in the Welland Canal. He cannot account for the shortage.

The commercial fishermen on the Niagara River complain of the new Order-in-Council passed by the Dominion Government regarding a close season for Sturgeon. Grounds that were formerly fished by both Canadian and American fishermen are now open only to Americans. This, he thinks, should be rectified.



The close seasons and other regulations were well observed. He has had some complaints of illegal fishing on the Niagara River, which is receiving his attention.

Overseer Howard, of Collingwood, reports that the fishing in the waters under his supervision has been as good the past year as any since he has been acting as Fishery Overseer. There were not as many fish caught during the season, but it was not on account of any scarcity of fish, but because of the very rough weather that prevailed throughout the year.

The angling for Brook Trout and Black Bass has been very good.

The close seasons and other regulations were well observed. He finds the fishermen willing to obey the law, as they consider it much to their interest to do so.

Overseer Huntington, North Bay, reports that the fishing in his district has been better this year than last. On Lake Nipissing it is better, owing, he believes, to the large number of Sturgeon taken from the waters by the licensed fishermen. The reports from tourists on this lake as to Basses, Pickerel, and Maskinonge fishing certainly surpasses anything he has heard of elsewhere in Ontario. The Speckled and Grey Trout fishing in the inland lakes, especially along the Temiskaming and Northern Ontario Railway, is excellent. He has seen Speckled Trout caught in Pine, Goose, Anderson, Rabbit, Rib, and Temagami, and numerous other smaller lakes, that would average two pounds each, and some of them weigh over five pounds. Rib, Temagami, and Rabbit Lakes are now, without exception, the finest Trout lakes he knows of in the Northern Territory. Grey Trout readily take the bait in the spring and early fall, and he has seen some weighing from twenty-two to twenty seven pounds taken with the rod and line from some of the lakes mentioned above.

He would suggest the adoption of strict measures governing some of these Trout lakes as to catch, weight, etc., similar, in fact, to the Nepigon regulations. He is glad to report that no serious violations of the fishery law have taken place in his territory, and that the law on the whole has been very well observed.

Overseer Hughson, Orangeville, reports that in many of the rivers and lakes where Speckled Trout formerly were to be found in great numbers are now completely fished out, and would require re-stocking and careful protection to restore them to their original state. He would like to see the lakes in his division producing good fish, in order that the people could be supplied with good angling, and would like to have the waters stocked with Black Bass, which, he thinks, would thrive well in those waters. At one time all the streams were well filled with speckled Trout and Suckers, but the Suckers are the only fish left. The laws and regulations were well observed.

Overseer Johnson, Brantford, reports that the angling in the Grand River during the past year has been good; the Bass and Pickerel have been a good size and quite numerous. Some fishermen also report good trout fishing. The Bass consigned here arrived in good condition, and were successfully planted in three different places above and below the dam, and in the canal leading to Mohawk Lake. The people fully appreciate this work.

The sporting public think it a wise thing that the Department set the stocked waters apart for a term of two years. At the expiration of that time there should be good angling. Two cases of illegal fishing came under his notice, and convictions were secured in both cases.

Overseer Johnson, Parry Sound, reports that the fore part of the tourist season was cold, but the weather in August was warm, and the tourist trade was good. In interviewing a good many of the tourists they stated that the angling both in Georgian Bay and the inland lakes was much better than heretofore, and expressed themselves as well pleased with the fishing, and also with the regulations as to fishing as put in force by the Department. The net fishermen have had a fairly good season, but during the fall many of them lost their nets, owing to the heavy west winds.

Overseer Johnson, Harwood, reports that the quantity of Black Bass caught during the season was in excess of the preceding year, but the Maskinonge fishing was not quite so good as in former years, owing to the very rough weather that prevailed during the season, which roiled the water to such an extent that the conditions for Maskinonge fishing were not favorable. Still, he reports a fairly good catch.

The tourists are increasing every year. They were more numerous than in any previous year, and the indications are that the coming seasons will see a great number visit the locality.

He secured five convictions during the year. The close seasons were fairly well observed.

Overseer Labatte, Victoria Harbor, reports that there was a decrease in the catch of the different kinds of fish for the market as compared with that of previous years, the Herring fishing especially being very poor, owing to the rough weather and winter setting in so early. On the other hand, game fishing increased, angling and trolling being very good during the past season, and as a result this district is becoming very popular as a resort for tourists.

Maskinonge are increasing rapidly; a considerable number of good catches of large ones were made during the fall months. There was also a considerable quantity of Bass taken.

As far as could be ascertained, the close seasons were well observed, as no illegal fishing came to his knowledge.

Overseer Lamarsh, Wheatley, reports that there has been a general decrease in all kinds of fish caught except Pike, or Blues, the catch of this variety being practically the same as last year.

The extraordinary early winter, which started about the middle of November, has not been equalled here for twenty odd years, and has been the cause of a great loss and hardship to many of the fishermen, while the decrease in many respects can be attributed partly to the unfavorable season, which was similar to 1902. The fishermen are becoming uneasy at the continual falling off in the catch of Herring, the decrease this year being 90,900 pounds, or actually about one-half the total catch in 1902. Whitefish decreased from 95,429 to 41,698 pounds, Sturgeon from 19,064 to 13,597 pounds, Pickerel from 174,823 to 96,531 pounds, Perch fell from 131,086 to 87,115 pounds, and Catfish decreased 3,450 pounds; mixed and coarse fish show a decrease of 19,207 pounds.

The steady decline in the catch of Herring from a total of 788,616 pounds in 1899 to 53,394 in 1903 should be a cause for reflection on the part of all connected with the fishing interest in any capacity whatever. The general feeling is that unless more stringent measures are taken in the early spring and late in the fall to prevent American poachers trespassing on our shores, which they do sometimes six weeks and two months before the Petrel gets into commission in the spring and after she is laid up in the fall, and unless our Department refuses tug gill net licenses in western Lake Erie, the Herring fishery industry of Lake Erie will be a thing of the past.

A great deal of feeling was aroused among the pound net fishermen on the main shore of Essex and Kent Counties by the action of the gill net tugs from Pelee Island. Some four tugs could be seen at once fishing in the passage between Point Pelee and Pelee Island, and all along the main shore within two and three miles of it. He managed to seize twenty-six nets off Point Pelee about two miles out, and confiscated them. His experience in lifting the confiscated gill net firmly convinces him that it is a most destructive mode of fishing. The most of the fish found in the net were spawn Herring. Fully one-fourth of those caught dropped out before he got them in the boat. He is of the opinion that the interests of the fishing industry would be best secured by prohibiting all fishing from the 20th November till April 1st. Spawning Herring, as well as Whitefish, would be protected, and the fishermen

would benefit by saving fishing gear, of which a great loss occurs every year in these waters.

The various close seasons and prohibitions were well observed.

Overseer Laird, Guilds, County Kent, reports that fishing commenced about the first of May. There were no heavy runs of fish during the whole season; in fact, the Herring and Whitefish are steadily decreasing every year. In 1899 there were caught in his division 3,624,130 pounds of Herring and 68,030 pounds of Whitefish; in 1900, 2,771,094 pounds of Herring and 33,449 pounds of Whitefish; in 1901, 2,059,751 pounds of Herring and 52,562 pounds of Whitefish; in 1902, 553,190 pounds of Herring and 29,660 pounds of Whitefish; in 1903, 409,932 pounds of Herring and 22,710 pounds of Whitefish, so that except in 1891, when there was a large increase of Whitefish, these two kinds of fish have been decreasing at an alarming rate, and as the Herring fishery of Lake Erie a few years ago was more valuable than all other kinds of fishing, it should surely set the Government thinking as to what is the cause of this very large decrease. In his opinion there is one, and only one, cause, and that is the wholesale destruction of the Herring and Whitefish with gill nets during the spawning season in the latter part of November and the fore part of December, when these fish are on the reefs. It is a well-known fact that when these fish are heavy with spawn they cannot be caught in pound nets, as they will not follow the lead, but at such times they are an easy mark for the gill net. If there is not better protection provided for these fish in the very near future, it will be of no use to fish the waters of Lake Erie for Herring and Whitefish, in fact, he is almost afraid it is too late now to expect any great amount of Herring to be caught in Lake Erie. However, he would like to see something done to better protect these two valuable kinds of fish, and he thinks it would be worth the experiment to make a close season, say from the 15th of November to the 1st of April, and not to allow any gill netting at any time. He believes it is a great mistake to license gill nets in any waters that can be fished with pound nets: he also believes there are too many pound nets being fished. He thinks that three nets are all that anyone should be allowed to fish.

He is pleased to see that at last some effort is being made to come to some understanding with the border States, so as to have a uniform close season established. If this had been done ten years ago there would not have been such a great decrease in the Herring and Whitefish as has taken place in the last five years. Rond Eau Bay, which was a few years ago a grand sporting water, is not at the present time nearly so good, from what cause he would not like to express a very decided opinion. Of course, he has his own views on the matter. In the first place, he believes the Carp were allowed to secure a very strong foothold before means were taken to exterminate them; but as means are now being employed to rid the bay, or at least to keep these robbers down, he believes with care the waters of Rond Eau Bay can be made a sportsmen's paradise again.

There should be Black Bass planted in these waters, so as to keep up the supply of this game fish; and as they have no Trout or Maskinonge fishing in Rond Eau Bay, something should be done to keep up and protect the game fish that are there. The Eau is becoming more and more every year a resort for summer tourists; in fact, there is no time during the summer season when this popular resort is free of local or foreign tourists. It is the only sporting water in Western Ontario of any size.

The fishermen have observed the close season strictly, but have raised a great deal of objection to the close season on Sturgeon. They think it a hardship to have to throw out these fish, when at that time of year there is always a light catch of all other kinds.

Overseer Legault, Sturgeon Falls, reports that the catch for the past year has been greater than the combined catch of the two previous years, and the fish were of a fine quality. Old experienced fishermen say that with a careful conservation there





Where the Front hide! The Matabetelawian.





Paradise Beach—Lake Temagami.







Sharp Rock Outlet—Lako Tenngami.







"The Good Old Summer Time"



is abundance of fish in the lake to last for years to come. A few cases of illegal fishing came to his notice; the parties in each case were fined. The fishermen were well pleased with the season's catch. The laws and regulations of the Department were fairly well observed.

Overseer Loveday reports no prosecutions during the year. The public seem to be falling in more and more with the necessity of observing the fishery laws, and co-operating with and assisting the overseer in the enforcement of the laws.

Fishing has been very good on the upper Ottawa, and some very fine fish have been taken on the Rideau River as well, but the lower Ottawa seems to be getting worse every year. There are no Bass of any account, and Pickerel are decreasing. He does not believe it will ever be any better, as there are no spawning beds but what are covered with sawdust.

Overseer Menzies, Burk's Falls, reports that he has visited during the year a great number of the lakes and streams in his district, and found that the laws and regulations were observed. The tourists who visited the division found the Bass and Pickerel fishing all that could be desired. There are two lakes between Burk's Falls and Algonquin Park that contain Bass and Pickerel. The remainder are inhabited by Trout, Whitefish, Herring and Suckers.

The millowners all observe the law regarding the dumping of sawdust in the streams. There are no licenses issued in his division.

Overseer Miller, Wiarton, reports that he visited all the inland lakes and streams in his division, also the bays on Lake Huron. The Bass fishing on the Lake Huron shore and around the islands was not as good as usual. In discussing the matter with fishermen and settlers, a great many reasons for the shortage were advanced. In his opinion the most likely reason is the great abundance of Carp, which in the spring of the year frequent the waters in thousands, just at the time when Bass are on the spawning beds, and devour the spawn. They are very large, and come into the bays in such numbers that they crowd each other out of the water. They are so numerous and large that there is no chance for a smaller fish to exist. He is afraid that they will exterminate all other fish unless some plan is devised for destroying them. In the inland lakes Bass have been plentiful and the angling good. Pike were very numerous. Quite a number of Bass were taken that bore every evidence of having been bitten by Pike; in some cases pieces were bitten clear out. He says all the islands along the shores of Lake Huron have been sold, and the parties purchasing have in many cases built beautiful summer cottages, and if the game fish could be preserved, Wiarton would have one of the finest summer resorts in Ontario. The scenery is unsurpassed, and the place is easy of access, being only a couple of hours' run by boat from Southampton, and eight to twelve miles by land from Wiarton. He finds that the public are very anxious to assist him in enforcing the laws and regulations of the Department. Two cases of illegal fishing came to his notice, and on the whole the different close seasons and other regulations have been well observed.

Overseer Moore, Huntsville, reports that the Black Bass in the lakes there are doing remarkably well. During the past season large numbers were caught by tourists and others, although as a rule those caught were not large in size.

He thinks it would be advisable to have cautionary notices of a permanent nature placed in conspicuous places informing the public as to the season and limits in regard to Bass fishing, as he has found that any violation of the law has been due entirely to ignorance on these points, Bass fishing being an entirely new thing in that neighborhood. Such notices would be required for Vernon, Fairy, Mary and Peninsular Lakes.

Some reports of violations of the fishing laws have come before him, but upon investigation there was no evidence to warrant prosecutions.

There has been no trouble from the owners of sawmills depositing sawdust in the water.



The number of tourists visiting this part of the district is increasing annually, and they tax the accommodation to its utmost, and a great many are building cottages for themselves. No fish is sold for export.

The close seasons are well observed.

Salmon Trout fishing, which fish are caught principally on the troll, in spring and fall, did not appear to be quite so good this year. There is no Maskinonge or Speckled Trout fishing in the above lakes.

Overseer Moore, Lakefield, reports that the catch was not as large as last season, perhaps owing to the coolness of the summer. A great many tourists visited the lakes during the summer, and had fair catches of Bass and Maskinonge. The law has been well observed, both as to close season and the number of fish caught daily by tourists. He suggests that the number of Bass that may be caught by any one person in a day be changed to 6, and 2 Maskinonge, and as in previous reports he again suggests that foreign tourists should pay a small license fee. Most of them that he has talked with express a willingness to pay toward the expense of restocking the waters and better protection of the fish.

He recommends that the use of spears be entirely prohibited. At present they are used to kill Suckers, and as the Maskinonge spawn about the same time the Suckers are running, he is of opinion that a number of Maskinonge are killed at that time.

Overseer Myers, Orchard, reports that the chief fish in his district are Speckled Trout, and the catch this year has been about the same as last year, but there were some larger fish taken than usual. The laws and regulations of the Department were well observed.

No mill refuse is allowed to run in the streams. He pays special attention to this clause of the Act. Most of the waters in his division are under control of fishing clubs. The unanimous wish of the members is that the close season should commence on the 15th August, as a great many trout caught during the latter part of August and the fore part of September are full of spawn.

Overseer McAulay, Souhampton, reports that the fishing during the year has been poor, owing to the very rough weather that prevailed. The fish were just as plentiful as last year, but the fishermen could not in many cases get out to lift their nets, consequently great quantities of fish spoiled in the nets. The Bass fishing on the lake shore in Sauguen River has been very good. There is only one fishway in his division, which is in a very good condition. Owing to the rough weather there were 125 nets lost during the season.

Overseer McCall, Vittoria, reports that he finds it hard to base a calculation as to the take of fish, as there were fifteen less pound nets fished this year than during 1902, there being only four pound nets fished fronting the County of Norfolk this year.

There is no doubt there was a great falling off in the Whitefish; fishermen report that the usual quantity did not come on the shore fronting the Townships of Walpole and Rainham, which is the great breeding ground. One pound net fisherman said there was not one fish this year where there were five the previous year.

There would not be five per cent. of fish sold here for home consumption.

The fishery regulations and close seasons were fairly well observed, with the exception of Long Point Bay, where poaching is largely on the increase, and no attention is paid to fishery regulations or close seasons, and every device is used to take fish at all times when possible.

There is no mill refuse allowed to run in the streams. There is one fishway on Nanticoke Creek at the dam, one mile from Lake Erie.

Overseer McComber, Port Arthur, reports that there would have been a much larger catch of fish had it not been for the extremely rough weather on Lake Superior.

last fall, before the close season. Quite a number of the men lost their nets, and a few lost their entire fishing outfit, and consequently abandoned the fishing grounds, and did no more fishing during the remainder of the season. It would have been necessary to purchase new outfits, and the time was so short they did not consider it worth while. It is estimated that about fifty per cent. of the catch of fish was shipped to the United States, the balance being shipped to Canadian markets. He has not been informed of any abuses existing during the year. The close season and other regulations of the Department have been well observed. There are no fishways in his division, and no saw mills outside the breakwater. He has always more or less difficulty in getting returns from the fishermen. Most of the men are uneducated, and cannot fill in the forms, and they are all such great distances apart, it takes time to get them in. However, he has been furnished with returns by all the fishermen. It would be a great benefit to have a fish hatchery on the Canadian side of Lake Superior. It could be built at a moderate cost, as there are fine streams suitable for the purpose. He is informed that the fishing industry on the American side, where they have hatcheries, is far superior to the Canadian side. He has lately been informed of a lake two or three miles north of Loon Lake, which is swarming with Bass. If this lake became known it would be a great attraction for tourists. The lake is about  $2\frac{1}{2}$  or 3 miles long. It is but a short distance from the C. P. R. line of railway. There is also a lake five or six miles north of Ouimet, on the line of the C.P.R., which is plentifully supplied with Speckled Trout weighing from two to three pounds. It would be very convenient for tourists, as they would take waggons at Ouimet and drive out to the lake. There is no Maskinonge in that part of the country.

Overseer McKewen, Tehkummah, Manitoulin Island, reports that a great many tourists visited that locality during the year, where they find good accommodation at Manitowaning, Little Current, Gore Bay, and many other smaller places. They spend a great deal of money, and in return get some excellent Bass and Speckled Trout fishing, and in many cases a new lease of life.

The laws and regulations of the Department are well observed. The Manitou Fish Co., who have a lease of Manitou Lake, have not found the fishing as profitable as expected, but they are not discouraged; they are making extensive preparations to stock the lake next spring with White Fish and Salmon Trout by erecting a large and expensive hatchery at the outlet of the lake, and intend to have it in full operation by the opening of spring. The settlers are pleased that their interests were guarded when leasing the lake, by reserving them the right to fish with rod and line for their own use.

Rumors reached him last summer that the company were doing some illegal fishing, but on investigation he found the report to be untrue. Some of the small inland lakes furnish good Bass fishing. The fishing in the North Channel and Lake Huron seems to have been fairly good.

Overseer McKirdy, Nepigon, reports that the revenue received from fishing permits issued was \$1,080.00, some \$15.00 less than for 1902; the very unfavorable weather during the latter part of June and month of July, made these months very light, otherwise the season would have been a record breaker.

The fishing on the river was fully up to the standard, both in size and quantity, to other years. The river has been well patrolled, and the camps kept in excellent sanitary condition. The opening of two new camping places has helped materially to relieve the congestion during August.

Considerable has been done in clearing out the Pike and Suckers, thousands of these pests having been destroyed, which will, no doubt, have a beneficial effect. He would, however, suggest more radical measures to clear the river of these pests; then indeed we would have a Trout stream to surpass the fondest dreams of the disciples of Walton.

Many of the leading sportsmen who visit the Nepigon annually are very desirous of preserving this stream for fly fishing only, claiming that the various artificial baits are barbarous, and not fit to use for taking the lordly Trout. On the other hand, the bait-fishermen claim that the larger fish do not rise to the fly, in fact if they had to depend on what they caught with the fly, their supply of fish would be extremely small. It is his belief that an expert fly-fisherman can catch more fish than the bait fisherman, and certainly the fly-fisherman has the acme of pleasure.

In proof of the fallacy of the bait-fisherman's contention, he quotes from his record book Mr. Henry Bristol's (New York) record this season :

	Pounds.		Pounds.
1 trout .....	6	1 trout .....	5¼
1 trout .....	7¼	1 trout .....	5¼
1 trout .....	6	1 trout .....	7
1 trout .....	5½	1 trout .....	6¼
1 trout .....	6	—	—
1 trout .....	5½	10 trout .....	60

All taken with the fly.

He thinks fishing like this should satisfy any one.

It would add materially to the comfort of the river if the portages were improved by removing the boulders from the paths, making permanent canoe landings, with a portion of them at the ends of the portages.

The Canada Fish Co. have not found winter fishing a success, their catch being a very light one. Summer fishing is the only proper method, and until such time as proper facilities for handling the fish from Lake Nepigon to the station here is secured, nothing of any moment can be done.

The handling of some 200 Trout varying in size from 1 lb. to 6 lb., and transporting the same in the C. P. R. fish car (specially constructed), was a complete success, every fish reaching Rat Portage safely. He thinks the subject of restocking the depleted streams with Brook Trout like those from the Nepigon, cannot be too highly commended, but suggests that by use of a fish hatchery, and keeping the fry until they are a year old, when they will be able to take care of themselves, it could be carried on more cheaply: and with the unlimited supply of spawn that could be procured, every lake and stream in the country could be stocked.

Overseer McRitchie, Bothwell, reports that the catch was an average one. There is a slight increase in the value of the gear used. The close seasons and other regulations of the Department were well observed, no cases of illegal fishing having come to his knowledge.

Overseer Nash, Rat Portage, Lake-of-the-Woods, reports that in comparing the catch of 1903 with that of 1902, a small decrease will be found in 1903, which can be largely accounted for as follows :

Twelve pound nets were fished in 1903, where twenty were fished in 1902. Last summer during what is considered usually to be the very best season for fishing in his district, a severe storm, accompanied with high gales, completely destroyed the pound nets and many of the gill nets, and before new nets could be procured and set the season was practically over. Some licenses were not used at all, while some others were used but little, as the returns will show. Notwithstanding all this, there is seemingly general satisfaction among the fishermen with the catch during the year.

There has been but one important infringement of the law come under his notice, that being the illegal catching of Sturgeon in Rainy River, which same he reported to the Department fully in May last. Seven boxes of Sturgeon were seized, which, on instruction from the Department, were sold to the highest bidder.

His district has been most fortunate in having the inland lakes stocked with two cars of fish : one car of Bass in Long Lake and one of Trout in Berry Lake. The Pass placed in Brooks, Otter and other lakes a few years ago are now in a splendid thriving condition, and many sportsmen the past summer enjoyed an outing there.



With the many pretty lakes they have in that district being stocked with such game fish as Trout and Bass, it is fast becoming a most attractive spot for the tourist.

Then, perhaps, should be noted the extreme likelihood of the Grand Trunk Pacific opening up the large territory north of Rat Portage, which contains many lakes and rivers which, according to the explorers' accounts, are simply teeming with fish, while the forests abound with such game as Moose, Caribou, Deer and Bear, the latter being particularly numerous. It is evident that this district is a most enticing one for the tourist.

He concludes by saying "that the industry is looked upon here as being quite a substantial one, and a large factor in the commercial life of the district."

Overseer Nichols, Hall's Bridge, reports that the quantity of Bass and Maskinonge caught during the season was about the same as last year, but, as the number of tourists was about double, the individual catch, especially of Bass, was correspondingly smaller. Although the fishermen are becoming more expert and have better tackle, and the guides are better acquainted with the fishing grounds, the catches were, as a rule, smaller in number than last year.

This decrease may be accounted for by the rapid lowering of the water levels at the various dams after the spring freshets. In this way millions of Bass and 'Longe spawn are left to die on the shores and in the drowned lands every spring. The spawn is destroyed also by Catfish, Eels, Suckers and other coarse fish. But the greatest cause of decrease is the ever-increasing number of American tourists who come to this locality year after year. Their number has doubled during the last three years, and as new railroad and steamboat lines are being added every year, it is reasonable to expect that the Kawartha Lakes will become more popular, and the number of fishermen will rapidly increase. Thus it is only a matter of a few years when the Black Bass in these waters will be exterminated, and the large revenue derived from the tourist traffic will be lost to the district, unless the waters are re-stocked with Bass.

The close seasons were very well observed, very little illegal fishing being attempted. Several spears and trawling lines were taken, and the offenders dealt with, as mentioned in his monthly reports. The extension of the time prohibiting the sale and barter of Bass and 'Longe has done much to suppress illegal fishing.

The mill owners have taken every precaution to prevent the pollution of the waters by mill refuse.

There are no fishways in his division.

He submits the following recommendations, which he believes would greatly benefit the division under his charge :

The waters should be re-stocked with Black Bass.

The chief lakes of his division are Pigeon, Chemong, Buckhorn, Deer, and Lovesick Lakes, which form a connected chain from Bobcaygeon to Burleigh Falls, being in part a part of the Trent Valley waterway. On these lakes are situated four large summer resorts, at Bobcaygeon, Chemong, Buckhorn, and Burleigh Falls, which cater to the tourist trade. The hotel registers show a daily average of from fifty to eighty guests at each resort during the summer months. Several steamers are engaged in carrying these people from point to point, and each resort gives employment to from twenty to thirty guides during the season, and altogether these summer visitors leave a great deal of money in this locality. Their number, too, is steadily increasing, having doubled during the last three years. So many fishermen are a heavy drain on the waters, and the Black Bass, which are the chief attraction to the angler, are becoming scarcer year by year. Unless some means are taken to re-stock the waters, this district will soon lose a large and profitable summer trade. These waters, and especially Deer Lake and Deer Bay are admirably adapted for breeding grounds.

The daily maximum catch of Bass should be reduced to eight. This is as many as can be used, and if more are caught they are allowed to spoil in the ice houses and have to be thrown away, or it is a temptation to the guides to sell them.

A small license fee should be imposed on foreigners. If the revenue so derived were expended in re-stocking the waters, it would tend to attract tourists to this locality rather than drive them away.

Overseer Norris, Bolingbrooke, reports that there has been very little net fishing in his division during the year, there being very few lakes where it is worth while setting a net. The angling for Bass and Pickerel in Christie's Lake has been very good; this lake is fast becoming a favorite resort for tourists. There is a very small portion of Bob's Lake in his division, and as far as he can find out, there has been a decrease in the catch compared with that of last year. He thinks this lake is overfished, and that it would be wise to stop all net fishing for a term of four or five years. The laws and regulations of the Department were well observed.

Overseer Norquay, Manitowaning, reports that they have a number of good Brook Trout streams, two of international reputation, the far-famed Blue Jay and Manitou streams. The fishing in these has apparently not deteriorated to any great extent, although there is no doubt a progressive decline owing to the greater fishing, lessened volume of water and poaching (out of season fishing), unknown when the country was unsettled.

The wonder is that any fish are left.

The hand of every man seems to be against the continuance of this species, as they are fished for in and out of season, low water and high, spring, summer, fall and winter, by fair means and foul, and the only period of exemption is the emigratory one when the larger specimens strike for lake water, returning about July in each year. Bass-fishing is most excellent in all the lakes hereabouts, most of these bodies of water containing apparently inexhaustible quantities, still there is danger of depletion, many fishermen not having the fine instinct of sportsmen, but striving, one with the other, for the largest catch, neglecting to "play" their fish and give them that chance for life to which they are justly entitled and which, while increasing the enjoyment, would tend to conserve the supply. A good deal of difference is noticeable in the gamey qualities of fish in the different lakes, those in the smaller ones being the best fighters, owing, perhaps, to the greater competition necessary in the gathering of food. The weight of those usually caught is from two to four pounds, with occasionally a heavier specimen.

Bass are taken by line and troll, as also the Salmon, but not as extensively.

We find in Lake Manitou quite a number of large Speckled or half Speckled Trout of excellent quality, up to four pounds in weight, and which seem to be a cross between Salmon and Brook Trout varieties. They are quite red in color and owing to the very deep, cold water seem to thrive in the lake as well as smaller ones do in spring brooks. They are seldom taken by line or trowl, usually in the spring run of suckers, and therefore in bad company. This district is very popular as a summer resort for fishing purposes, and promises to be more so. Lake Manitou has long been the Mecca of good fishermen, and the extensive improvements of the Manitou Fish Co. must extend facilities for the exercise of this noblest of pastimes. The company have in one year made the beginning of what should be a paying and instructive business, and in his opinion should be encouraged to the full extent permissible by the Department. They have erected large dock accommodation, which permits of the safe anchorage, not only of their own fleet, but of that of others, and in addition to their hatchery, which, successful or not, will in experience prove to this Province of inestimable benefit, makes the habitation of the shores of this lake and its exploitation for fishing and tourist purposes possible. They have also built large and commodious boarding houses, ice and cold storage places, and the only bar in the way of their success is the accumulation of Suckers and Eelpouts now in the lake and which must be gotten rid of before their business of Trout breeding will have a chance of success. He has seen tons of Pouts taken at a lift; the lake should be thoroughly, frequently,

and systematically fished so as to exterminate these Pariahs of fishdom. A new field has been discovered at South Bay, for Bass, where they cluster in thousands among the rushes at the head of that bay, three miles from Manitowaning, and an overseer should be appointed at Manitowaning to watch this ground.

Overseer O'Connor, Long Point, County Leeds, reports that the waters over which he has supervision abound in a beauty of scenery and plentitude of game fish that should at once recommend them to be of special interest to the angler and tourist.

Bass, Pike, Whitefish, Salmon and other smaller fish are all to be found and the catch of last season showed somewhat of an increase. The proximity of the waters to such summer resorts as those among the Thousand Islands renders them sure of some attention from tourists.

Herein lies a difficulty. A few genuine sports visit the waters and would scorn to infringe upon the laws, while many others drive back from the St. Lawrence only to stay a couple of days, and while there catch all they can, quite regardless of the law. Then they leave, taking the more choice fish with them and leave the rest to rot on the camp grounds. These fellows, he says, need careful watching. They come and are gone again before he is aware of their presence, and it is only when it is too late that he knows of their work.

On the famous Red Horse Salmon grounds there was hardly a day during all last summer that boats might not be seen on this stretch of water and a good catch of Salmon was reported and most of it was done legally. A few fishermen in camp there were thought to be doing a little illegal fishing at night. Since his appointment as overseer, he has seized two gill nets at that point.

Heretofore there has been much illegal fishing for Whitefish during the run in the fall. There are three good rapids in those waters, and the Whitefish playing in large numbers in the shallow waters are rather tempting, but by frequent visits he has greatly reduced this evil. He also captured one net at this place.

A source of grievance to the people of the vicinity is the fact that there are parties doing nothing else all summer but trolling for Pike for market, and if this thing be allowed to continue, in a very few years the lakes will be depleted of one of the finest fish they have. He says the Pike in those waters are different from any others in the lakes about there. They are more like the Maskinonge in shape and color and are game right to the finish. Fish caught and marketed in this way cannot be reported in any way. He knows of one man who marketed a ton of Pike last summer. He thinks some steps should be taken to stop this commercial fishing at once.

There has been no hoopnet fishing in his division for some time, except in South Lake, and he recommends that these licenses be discontinued.

Overseer Ogg, Hamilton, reports that the catch of Whitefish for the year has exceeded that of last year by 4,875 lbs., with two returns not received. The fish have been of an excellent quality, and the prices have been high. Full returns, he thinks, will show a very slight difference, if any, in the catch. All the fish caught are used for home consumption. The season's operations have been satisfactory to the fishermen, the prices of all kinds of fish being very high. Three cases of illegal fishing came to his notice, and in each case a fine of \$10 and costs was imposed.

Overseer Oliver, Little Current, reports that there has been a general falling off of the catch in his division compared with the catch of last year. Although the fishing has been lighter the fishermen have done fairly well, owing to the high prices received.

The catch during the ten days' extension of the open season that was granted was very heavy. He strongly deprecates the granting of any extension of the season in November, especially in the west end of Georgian Bay, as by the 10th of November the spawning season for the Trout in that locality is about over, and the first run of the Whitefish has commenced before the expiration of the ten days granted. It simply



means the wholesale slaughter of the spawning fish, especially the Trout. This would apply to the vicinity of Horse Island and South Bay as well as the west end of Georgian Bay. At the Duck Islands in the west end of his division the Trout spawn much earlier, the season being pretty well over by the 5th of November. At Cockburn Island and Meldrum Bay the conditions are about the same. Along the north shore of the north channel the conditions are different, as the catch in that locality consists principally of rough fish, that is to say, Pickerel and other coarse fish, his objection would not hold good then. He reports the Herring fishing at Bad River and Beaverstone in the Georgian Bay and Cutler in the North Channel to have been very good.

The catch in the North Channel in the vicinity of Gore Bay was lighter than usual. The pound net men at Cockburn Island had a good average catch, and at the Duck Islands the catch was fully up to that of last year. In the North Channel in the vicinity of Blind River the catch was less than usual; in the vicinity of Cutler it was about the same as last year, being a fair average catch. The season generally speaking has been a prosperous one for the fishermen, though owing to the very rough weather that prevailed during the month of November a good number of nets were destroyed at the Duck Islands and South Bay, and a few at Killarney and the Bustard Islands.

In referring to the decrease in the catch, he says that in the vicinity of Squaw Islands, Killarney and Bustard Islands, the decrease is owing in his opinion to the waters in that locality being over-fished in past years, and at the present time he believes there are too many nets used there. About 90 per cent. of the catch is exported to the United States, the average price received by the fishermen being about five cents per pound. The remaining 10 per cent. is sold in the local market and shipped to different parts of Canada.

The Bass fishing has been good; in the North Channel he thinks it is the best to be found in Ontario. There is good Maskinonge fishing, and Pickerel are also reported to be plentiful. There are a few Brook Trout streams which have furnished some excellent sport for the anglers.

The North Channel from McGregor Bay to Algoma Mills is becoming a great resort for tourists. There are a large number of both small and large, sailing and stream yachts being used for fishing and pleasure during the Trout season. This valuable trade is increasing every year.

Overseer Paul, Loring, reports that the angling for Bass, Pickerel and Maskinonge in his division has been first-class, but says the Maskinonge are not so plentiful as they were some years ago, owing, he thinks, to so many dams being placed on the rivers by the lumbermen in order to remove their sawlogs. He thinks something should be done to remove these dams, as they were built years ago and have served their purpose, and their usefulness is gone.

The laws and regulations of the Department have been well observed. He would recommend that a free license be granted for domestic purposes, as there are plenty of Whitefish and Herring in the waters and they cannot be taken any other way.

Overseer Rennie, Napanee, reports that the catch for the season was somewhat better than that of last year. All the fish caught were exported to the United States. The close season and other regulations of the Department were well observed; not one case of illegal fishing having come under his notice. A great many tourists visited Hay Bay during the season, lured there by the reports of the magnificent Maskinonge fishing, which, he says, was the best in his memory.

Overseer Robertson, of Hillsburg reports that the laws and regulations in the waters under his supervision were well observed. No fines or arrests were made during the year.

Overseer Roblin, Adolphustown, reports a small increase in the catch over the year 1902. About 90 per cent. of the catch is exported, the remaining 10 per cent. being

used for home consumption. He complains that the anglers destroy a great many minnows for bait, and would recommend that notice be put up to further the protection of same. The fishermen mostly observe the laws and regulations of the Department. Three charges of illegal fishing came to his notice during the year, and a fine was imposed in each case. The Bass fishing continues to improve, and anglers are becoming more numerous every year.

There are no fishways in his division.

Overseer Sargent, Bronte, reports a decrease in the catch of Herring compared with that of last year, but on account of the high prices that prevailed during the year the season's business, was, on the whole, a very favorable one. The bulk of the take was disposed of in the Hamilton and Toronto markets. He is glad to report that the old Ciscoe they had in former years are returning. He noticed in two hauls made by the fishermen (and there were two or three thousand in each haul) that 90 per cent of the total catch were Ciscoes. The fishermen are much pleased that they are returning. He has every reason to believe that they will again be as numerous as in former years. Angling has not been so good in the Twelve and Sixteen Mile Creeks. He thinks this is caused by the abundance of German Carp that frequent these waters, and hopes the Department may devise some means to rid the waters of this noxious fish. The close seasons and other regulations were well observed.

Overseer Shewen, Apsley, reports that there was an increase in the catch of fish for the past year on account of an influx of American tourists. All fish caught were used for home consumption. He visited the different camps and cautioned the parties about catching more fish than they could consume, and the result was that the settlers in the vicinity were given all surplus fish, and none were wasted.

The year before he was appointed overseer he counted over 100 Black Bass lying rotting on the shore of Long Lake, Township of Burleigh, at one camp. He has patrolled his district at different intervals to see that the close season was duly observed.

He had reason to believe that illegal fishing was carried on in October at "Trout Lake," Township Burleigh. He immediately visited the camp and lake, but found no nets.

No damage has been done to fish by dumping mill refuse in the streams. There are no fishways, but he would recommend one to be placed between "Gold Lake" and "Eagle Lake," and another between Eagle and Deer Lakes.

He had a small grant some four years ago to place some parent fish in Loon and Little Wolf Lakes, and is pleased to say that the result has proved satisfactory. The settlers are now catching fair-sized Black Bass.

The Americans, who are now coming more frequently and in greater numbers to this district, have asked "why the Government do not place fish in more of the pretty and numerous lakes which are now devoid of game fish."

There are two lakes, Wolf and Crab Lakes, Township Anstruther, both suitable for Bass, and they certainly ought to be stocked with Bass and Salmon Trout. It might be done at no great expense.

Overseer Skeen, Harwood, reports that the season as a whole has not been as good for Maskinonge fishing as last year, owing in a great extent to the prevalence of very high winds, which kept the water in a condition that was not favorable for trolling, and caused the tourist to seek the more sheltered places and angle with the rod and line for Bass, in which they had excellent results. There was an increase in the number of tourists who visited these waters during the year, and he looks for a much greater number during the coming year, as Rice Lake is fast becoming known far and wide as a sportsman's paradise. The close seasons and other regulations of the Department were well observed. There are no fishways in his district. He is convinced that a lot of spawn is lost annually through the rapid lowering of the water during the spring, and suggests that some means be adopted to overcome this.

Overseer Smith, Charleston, reports that the fishing in his division has been as good as usual. Bass fishing was better than last season, larger and more plentiful, many of them weighing four and five pounds. Salmon fishing was good in the months of May, June and July, then not as good the balance of the season, owing to the abundance of natural food in the lake. The Trout have increased in size for the last four or five years, many of them now weighing from ten to twelve pounds.

The close seasons are well observed. There are no fishways in his division; there should be one at the outlet of the lake, as thousands of small Bass come up the stream and lie below the dam trying to get up into the lake all the latter part of the season.

This lake is a very popular resort, and the tourists are more numerous every season.

A few cases of illegal fishing have come to his notice; the nets were confiscated whenever found.

The usual amount of Salmon fry was deposited from the Newcastle hatchery in splendid condition.

Overseer Smith, Kemptville, reports that the catch as far as he can ascertain has been about the same as last year. All the fish caught were used for home consumption. The close season and other regulations were well observed, no cases of illegal fishing having come under his notice. There are no fishways in his division.

Overseer Smith, Gravenhurst, reports that the supply of fish in the Muskoka waters during the past season has been quite equal to any of former years. Anglers have been very successful, and although the two licensees have not had such large catches as in former years, it is owing to the fact that through several causes they have not pursued the fishing as energetically as formerly, in fact, the latter part of the season was so rough that scarcely any fishing was done by them. He has given careful attention to the observance of the close seasons and to illegal netting, and is able to report that the law is well observed. He has experienced more difficulty as to the size of the fish caught, and in one case had the person in possession of such fish fined, as reported to the Department at the time. All fish caught are sold for home consumption, and none are sent to any outside market.

The close seasons are well observed, and all mill refuse is disposed of without being placed in the water.

He has had reports of illegal netting, but upon investigation said reports were proved to be unfounded.

The greatest enemies of our game fish are the large numbers of coarse fish (principally Suckers and Ling), which are in the waters. The game fishing in this district is improving, owing in a great measure to the efforts made to restock the waters, and the district has been for a long time and is becoming more and more a popular resort for tourists and anglers.

Overseer Steel, Uptergrove, Lake Simcoe, reports that the Bass fishing in the waters under his supervision has been good, there having been some exceptionally fine catches made, the fish being large and in splendid condition. The season could not be called a favorable one from the anglers' and tourists' point of view, owing to the very rough weather that prevailed throughout a greater portion of the season. Had the weather been more favorable, no doubt there would have been a much larger catch. There are six summer resorts in his division, and numerous cottages for the accommodation of tourists, and they were all well patronized. He thinks he is safe in saying that in Lakes Simcoe and Couchiching Bass and Maskinonge fishing cannot be excelled in the whole of Canada. The fish are large, gamey, and of a delicious flavor. He has been told by a number of tourists during the past year, sportsmen who have fished all over America, that the above-mentioned lakes provide the finest Bass fishing they have found anywhere. It is only a question of time till these waters become celebrated throughout the whole United States as furnishing the finest Bass and Maskinonge



fishing to be found on the North American Continent. The Maskinonge fishing this year has been better than in previous years, and the fish were of a larger size. It is quite apparent that they are increasing rapidly. There are no Speckled Trout in his division, but Lake Simcoe contains very fine Lake Trout, and these are increasing every year. The lake also contains an abundance of Whitefish and Herring. The catch of Pickerel, he says, was fully up to that of last year. He would recommend that the close season be made from the 1st of April, instead of the 15th of April, as at present, as the Pickerel begin to run in the latter part of March. Carp are becoming very numerous in the lake. He says the laws and regulations are well observed.

Overseer Stephens, Chatham, reports that there has been a small decrease in the number of fish taken in this district, owing to the ice remaining in Lake St. Clair until so late in the spring, and no extension of the fishing season being granted. In the latter part of the year the catch was good, and prices very high, and the revenue received by the fishermen was an increase over last year. About 95 per cent. of the fish are exported to the United States, and about 5 per cent. are used for home consumption. The close season was very well observed, only one case of illegal fishing having come to his notice. Two hoopnets were confiscated. There is only one sawmill in his division; no sawdust or other refuse is thrown into the river. There are no fishways, and none are necessary.

Overseer Steed, Sarnia, reports a still greater decrease in this season's catch when compared with 1902. Several reasons may be mentioned therefor. The natural location of Lake Huron beach, combined with heavy weather, makes the results of the north and west winds very disastrous to all pound nets. Add to this the immense number of logs (brought down by the mill companies of Sarnia Bay) enclosed by a single boom log, and in some cases held by tugs just outside the pound nets; these are certain to cause trouble during heavy weather to all nets on the shore. New York is the principal market, and during the past season prices have been such as to help recompense the fishermen for the decreased catch. The close season for Pickerel was not perfectly observed. The Port Huron customs receipts for April 27th showed two entries of Pickerel, but it was impossible to trace these. On the 29th of April it was reported that our fishermen were selling to a fish dealer in Port Huron; when interviewed he pledged his word that he had bought no Pickerel since close season opened. On May 6th (when accompanied by Chief Sarvis and Detective Murray) seven arrests were made for illegal fishing. Three of these were dismissed; two found guilty, sentence suspended; one found guilty, paid costs; one found guilty, and fined \$10 and costs. Two more were convicted on May 10th for selling Pickerel in close season, and a fine of \$1.50 and costs imposed upon each. Word was next received that one of our own fishermen was fishing illegally at Port Lambton. This was found to be the case, and a fine of \$10 was imposed. Two more convictions were made in June for selling Sturgeon under four feet long, and a fine of \$1.50 each imposed. The fishway in his district (on River Sydenham) might be improved, having suffered from the floods of June.

Overseer Neil Stewart, Chesley, reports that Trout have been more plentiful in his district this year. Whitefish is a thing of the past, none having been caught. The catch of Herring has not been as good as last year, the weather being so stormy at the end of the season that the fishermen could not get out to lift their nets. All the nets that they put out after the close season was extended were lost, with the fish that were in them. There are no game fish of any account in his district, except a few Bass in the Saugeen River. A few Speckled Trout were caught in the north branch of the Saugeen River this summer. All the fish caught in his district were sold in Canada, probably one-third used for home consumption.

The close season has been strictly observed. No illegal fishing came to his knowledge.

No sawdust or mill refuse is allowed to go in the rivers.

There is one fishway, which was repaired by the Dominion Government last year.

Overseer Stewart, Pelee Island, reports that the complaint is general among the fishermen that the season has been a poor one. The spring and early summer catch was very fair, but the fall fishing was very light, stormy weather very much interfering with the operations of the fishermen. Some who continued their operations late in the season nearly lost their outfits, and several sets of stakes were lost. While several more pound net licenses were issued than in former years, the catch of fish has not increased accordingly; a comparison with the returns of the year 1902 shows a large decrease in Herring, Pike and Perch, while the catch of Whitefish in 1903 was more than twice as much as that of 1902, and a large increase in the catch of coarse and mixed fish. The depression in the business was improved, however, by the good prices paid. The demand for fish was very active, several fish companies making bids for the same. Practically all fish caught are exported. For this reason he has great difficulty in getting early returns from the fishermen, as they depend on the buyers to keep account, and do not settle until the close of the fishing.

Angling during the season was very good, and the number of persons domiciling for that purpose were more numerous than formerly. Permits issued also show an increase.

No fishing is done during the winter months.

The close seasons and laws generally were fairly well observed.

He made frequent examinations of the fish caught. He also went aboard the steamer "Louise" (engaged in carrying fish from this place to Sandusky), and examined the books of the company. He was kindly received, and every opportunity afforded him for information.

During the Herring gill net fishing the Ohio State Fish Hatchery and Fish Commission had men here for the purpose of taking spawn. The weather, however, was unfavorable for the gill net fishing this year, and the quantity of spawn obtained not what was expected.

During the early part of the season, in fact, as soon as the lake was clear to the eastward, American tugs came close to the island and set gill nets. No means were available here for getting after them, as the south bay was full of ice. Some persons did, however, go out in a row boat, and picked up some of the nets. These nets were afterwards turned over to the Captain of the D. G. steamer "Petrel." About the last patrol this steamer made, some nets were found to the westward of Pelee Island among the islands there, and were confiscated. These are the only incursions by the Americans known to him in that district.

In conclusion, he says that general satisfaction is expressed not only with the fishing laws, but with the manner in which they are administered.

Overseer Taylor, Westmeath, reports that the season just closed has been a very successful one. All the anglers who delight in Bass fishing are very much pleased with the season's sport. The many rapids in the river in that locality afford the best all round fishing to be found anywhere on the Ottawa, and the scenery cannot be excelled in Canada.

Whitefish are to be found in very large quantities all along the river. The close seasons were well observed, very little, if any, illegalities having come to his notice. He estimates the catch at about 30,000 pounds, all of which is used for home consumption. This is an increase over any former year. All kinds of coarse fish seem to be increasing rapidly, while Pike and Bass are not so numerous as formerly. He draws attention to the matter of fishways, which he thinks should be in every dam, to allow the fish to ascend to their favorite spawning grounds.

Overseer Terry, Queensville, reports that during last winter the Whitefish furnished good sport for the residents along the east shore. In past years very few of these

fish have been caught, as it was generally believed that they could be taken only with a net or spear, and these implements of capture were prohibited. Now it has been discovered that these fish take baited hooks readily if they are lying on the bottom. The fish are plentiful, and many were caught in this way. Larger Lake Trout have been caught by trolling this season than formerly. The Bass fishing was not so good, but some fine catches were made. The fish taken were somewhat smaller than usual.

The number of summer residents and tourists are becoming greater each year; all available places in boarding houses and cottages were taken, many finding comfortable quarters in the farm houses near the water. The number of summer visitors seemed limited only by the accommodation to be had. The beauty of the lake, good fishing, pure air, proximity to Toronto, and easy railway communication, account fully for the great numbers seeking rest and recreation here.

More cottages are being built and more room provided in boarding houses. How the fishing will hold out against this ever-increasing number of lines remains to be seen. Artificial preservation of the spawn of some of the best game fish seems to be the great remedy.

The trolling for Maskinonge has afforded excellent sport this year, some very large fish having been taken, while many lost baits and broken lines attesting the heavy tugs of these lusty fellows. Some of the fish taken weighed over thirty pounds. The great number of large fish is a very pleasing indication.

There are comparatively few streams flowing into Lake Simcoe that afford any fishing for Speckled Trout. Near the sources of some of those streams flowing south from the Ridges few fish are now found where years ago they were plentiful. Two mill ponds on these streams have been stocked by companies, and the fish have afforded good sport. There are several streams in the Township of Whitechurch which by a small expenditure could be made into excellent preserves for Trout. It is only in the upper portions of these waters that these fish can live.

It is with the greatest satisfaction that the sportsmen of this vicinity see that the wild rice is re-appearing in different parts of Cook's Bay. An unusual number of ducks found here a resting place on their way south this fall. If the growth of rice continues to improve, there will no doubt be as good shooting here as formerly.

Overseer Trotter, Bobcaygeon, reports that the season just closed has been a poor one, in fact, the worst he has seen in years. The lake opened early, but the weather was so rough and stormy until the middle of July that the tourists did not care to venture out. This, he thinks, accounts for the shortage in the catch. The catch of Maskinonge is estimated at 10,000 pounds, of Bass at 5,000 pounds. A great many tourists from the United States and Canada visited the district during the season, and say there would be a great many more if there was better hotel accommodation. Twenty-eight men were engaged by the tourists as guides. We call attention to the need of a proper fish slide in the Government dam, the present one being practically of no use, as the fish from the lower lake cannot make the ascent. The laws and regulations have been well observed.

Overseer Van Norman, Sault Ste. Marie, reports that it has been a prosperous and profitable year for the fishermen; that there is an increase in the catch of Whitefish, and that Trout and other fish will about compare with last season's catch, except Sturgeon, which shows a decided decrease, owing to the change in the close season. Nearly all the fish are exported to the United States; very few are sold in Canada. There were a few illegal nets in the vicinity of St. Joseph's Island. He thinks about three trap nets were set there. He seized one, and destroyed it, but could not locate the other nets or the offending parties. They were taken to the American side. No other abuses of the regulations came to his notice, and the several close seasons were well observed. There are no fishways in his division, and he is not aware of any injury being done by millowners allowing sawdust and other refuse to be dumped into the waters.



Overseer Walker, Port Credit, reports that the laws and regulations have been well observed. There has been a falling off in the catch by anglers, owing, he thinks, to the Carp becoming so numerous in the waters heretofore frequented by game fish.

Overseer Walsh, Carleton Place, reports that the year just ended has been a successful one for good fishing in his locality. The Pike, which are the most numerous, have been caught in large quantities, one man alone having caught 25 good-sized fish in one day. The Bass do not seem to propagate as fast in the Mississippi Lake as he thinks desirable. The only reason given for this is that a few years ago a dam at Innisville, about one mile from the head of the lake, broke away in the spring at the time the Bass would be looking up stream, and it is supposed that hundreds of them took advantage of the opening and went farther up and out of the lake. The fact that Bass became more numerous up above about that time strengthens this supposition. Another reason is that the Catfish have increased right near the mouth of the river not far from where some of the best catches of Bass occur. He is also of the opinion that they destroy the spawn and small fry. For this reason he granted a license to four hoop nets, and intended the fisherman to push his trade vigorously this winter against the Catfish, which he is doing, in the hope that it will lessen the destruction. He has killed quite a few Suckers, but he does not know if they affect the Bass.

The close season is very well observed. As he is on the lake more or less nearly every day canoeing, he is in a position to know. The fisherman states that he has seen very few Pike, and only two small Bass, so it is evident that Catfish abound where the others spawn. About nine miles down the river from the lake there are falls, and he does not think it possible for fish to mount them. Pickerel come up from the Ottawa, and have been caught right up to the falls, but he has never heard of one being caught above the falls.

An inspection of the place will be made in the spring to see if it is possible to build slides to assist the fish, as it would be quite an addition to the lakes here if the Pickerel could get into them, as he is certain they would do well.

This lake is quite a resort, a large four-storied hotel being built within three miles of the town; there are also about a dozen cottages in the same vicinity. The hotel has been fully occupied every season since it was built, and hundreds visit the park, which is one of the finest natural resorts he has ever seen. A perfect half-mile race track is built around the hotel, where the speedy ones from the town try themselves. The Northern Division meet of the American Canoe Association was held in front of the park in 1902. You can catch a Pike any time you wish within 100 yards of the hotel. On one side of the lake for six or seven miles the wild rice grows very thick, and hundreds of duck of different species fly here to breed and feed. Owing to the fact that there is no one here to look after them, they are shot at as soon as they arrive. In this way the shooting is spoiled for the opening of the season. Still, hundreds of them are shot. A more vigorous enforcement of the game law would make this one of the finest duck resorts in the country. Whitefish and Trout have been planted in the lake at different times, but were never heard of afterwards. There were some fish placed in the river near Almonte last year, but as it was done without the knowledge of the overseer he is not in a position to say anything about them. One net was seized in the lake last fall, and as it is not a safe place to set them, there is not much of it done.

Overseer Waddell, Leith, reports that there has been a decrease in the catch, owing to the very rough weather that prevailed during a great part of the season. The fish were as plentiful as in former years, but the fishermen in many cases were not able to get out to lift their nets. There were a great many nets lost on that account. The close seasons and other regulations were well observed. He reports that the trolling at Point William was all that could be desired. One party from Owen Sound caught seventy-one Trout in one day, and there were

many others who caught over sixty in one day. About 50 per cent. of the entire catch is shipped to the United States market, the remainder being used for home consumption.

There were quite a number of tourists who spent the summer or a portion of it at King's Park and Leith, and he is pleased to say the number is increasing from year to year.

Overseer Wensley, Wensley P.O., Addington, reports that the catch of fish in his division was about the same as last year, and that all were used for home consumption. He would recommend that licenses for domestic purposes be granted in all the lakes in his division, and that the fee be raised from \$1 to \$2. He also recommends that the close season for Salmon Trout be changed to commence on the 15th of October and close on the 15th of November. The several close seasons were well observed. Only one case of illegal fishing came to his notice, for which the offender was fined \$5 and costs. There are no fishways in his division.

Overseer Willis, Port Whitby, reports that the season was scarcely as good as last year, owing chiefly to the high winds and rough weather that prevailed early in the fall, very little fishing being done after September the first. The size of the fish taken was better than last year, especially Herring and what are called Cross Whitefish.

There were no violations of the laws, and the close seasons were well observed. The angling in Whitby and Pickering harbors was never better, both Pike and Perch being caught in large numbers. The fish were all sold locally or shipped to Toronto.

He strongly recommends that the present custom of giving any license holder the exclusive right to fish on any particular ground be discontinued, and that all licenses should be issued to fish in the front of the township in which they are held, as all the fishermen use one of the harbors, viz., Pickering, Whitby or Oshawa.

Overseer Willmott, Beaumaris, reports that during the past season angling has proved about equal to that of previous seasons. He has noticed that in many instances the run of Bass taken in the Muskoka waters has been longer than for many years past.

The past season was again a most successful one in the planting of adult Bass, which were brought from Lake Erie, a very small loss having been sustained whilst the fish were in transit.

He is of the opinion that many fish planted in the waters in the vicinity of Huntsville have found their way down stream, as Bass have been caught in places along the river (North Branch) where they were never previously known to exist. This also applies to the Madawaska River, where Bass have been caught, and which no doubt have found their way from lakes in the Algonquin Park, in which Bass have been planted. The Muskoka lakes are teeming with small Bass, which, had they an opportunity of growing after reaching the lawful limit, would in a few years give as good angling results as those of many years ago.

Settlers claim that they should have the privilege of netting Herring in the month of November. He sees no objection to this, as these fish would then be in such portions of the lake as to preclude the probability of catching other classes of fish.

Many hotel proprietors have written him requesting him to forward them abstracts from the Fisheries Act. He would respectfully suggest the advisability of having curtailed extracts of the most important sections printed on good, strong cardboard, and copies sent to each postoffice and railway station. It is only right to keep the public informed of the Act as it now is, and also of any changes which may be made.

Overseer Wood, Toronto, reports that there is not much change from the situation last year. In all probability the catch would have been much larger had not adverse winds and stormy weather prevailed during a good part of the season. He is pleased to be able to report the appearance again of the Ciscoe Herring, and some of the best informed of the fishermen are of the opinion that this valuable fish will soon be taken in large numbers in the waters.

The close season was well observed during the year. In one instance a fine was imposed, and two small nets placed in prohibited waters were seized.

He frequently examined packages of fish received by the express companies, but never found any illegal shipments, and in all cases where protected fish were exposed for sale satisfactory explanations could be shown by the vendors that the fish were legally obtained.

Overseer Yates, Goderich, reports that the catch for the season was fairly good. He cannot say that there was much improvement over last year. The close season was well observed, and for that reason there was same good Bass fishing at Goderich at the mouth of the River Maitland, and up the river from Goderich to Wingham. There was a new fishway put in the dam at Auburn this season. The catch of Perch and Herring by hook and line fishing at Goderich, Bayfield, and Port Albert was large. He has had no complaints as to sawdust, and on the whole he thinks the law has been well observed, no report having reached him to the contrary.

Overseer Yelland, Peterboro', reports that the angling was exceptionally good during the past season, the catch being equal to, if not greater than, the previous year. Two cases of illegal fishing came to his notice, and the parties were fined in each case, which was a warning to others to refrain from breaking the law. He confiscated several nets, which were destroyed.

He is of the opinion that if the water could be regulated so that it would not rise and fall during the spawning season there would be no need of re-stocking the waters, as the spawn deposited would hatch and mature, which would give ample fishing for all who cared to fish. He recommends that steps be taken to exterminate the Catfish that are becoming so plentiful, and are so destructive on the spawn of Bass and Mas-kinonge, and suggests that hoop net licenses be granted to be fished under the surveillance of an overseer.

The law regarding the running of sawdust in the streams has been well observed.

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Dining Room, Bon Echo Inn. (Lake Massanoga.)





Lake Massena—Frontenac Co.







On Lake Opinicon. (Rideau.)



A Morning's Catch. (Rideau.)







Lords of the Big Rideau.



## ANGLING WATERS.

COUNTY OF ADDINGTON—Overseer, P. J. Wensley, Wensley.

Weslamacoon, Otter, Thirty Island, Wolf, Michanog, White, Brule, Fortune, McKay, Schooner, and Buckshot Lakes—Speckled and Salmon Trout.

Loon Lake—Speckled Trout.

C.P.R. to Levant Station, then by team along Government road to Eagle Hill, about two miles from Weslamacoon Lake. Camp out.

DISTRICT OF ALGOMA—Overseer, R. M. VanNorman, Sault Ste. Marie.

Blind River—Bass.

Thessalon River—Speckled Trout.

Echo River—Maskinonge, Pickerel, Bass and Trout.

C.P.R. or steamboat. Camp,

Goulais, Batchewana, Montreal, Agawa, Michipicoten, Dog, and Sand Rivers, and Michipicoten Island—Speckled Trout.

Steamboat. Good hotels.

District of Algoma—Overseer, J. Whalen, Port Arthur.

Silver Lake, Mackenzie River, Loon Lake, Blend River, Corbit River, Carp River, and Six Mile Creek—Speckled Trout.

C.P.R. to Port Arthur. Hotels.

DISTRICT OF ALGOMA—Overseer, A. McComber, Port Arthur.

Steele River—Speckled Trout.

C.P.R. to Jackfish Station. Camp.

Loon Lake—Speckled Trout and Bass.

C.P.R. Camp.

BROCKVILLE—Henry Mathen, District Overseer.

St. Lawrence River—Bass and Maskinonge.

G.T.R. or steamboat to Brockville. Hotel accommodation.

COUNTY OF BRANT—Overseer, Henry Johnson, Brantford.

Grand River—Black Bass and Pickerel.

G.T.R. and T.H. & B. to Brantford.

Scotland and Mount Pleasant Ponds—Speckled Trout.

G.T.R. and T.H. & B. Hotel accommodation.

County of Bruce—Overseer, M. A. Macaulay, Southampton.

Saugeen River—Bass.

G.T.R. to Southampton.

Ghegheto's Islands—Bass.

G.T.R. to Wiarton, and stage from there. Camp.

Pike Bay, Stokes Bay, and Greenough's Harbor—Bass.

G.T.R. to Southampton, and stage from there. Camping.

County of Bruce—Overseer, B. B. Miller, Wiarton.

Miller, Emmet, Cameron, and Cyprus Lakes—Good Bass fishing.

G.T.R. to Wiarton. Farmhouses or camp.

COUNTY OF CARLETON—Overseer, E. T. Doveady, Ottawa.

Ottawa River and Rideau River—Bass, Maskinonge, and Pickerel.

C.P.R. to Ottawa, then by steamer. Hotels or farmhouses, or camping out.



COUNTIES DURHAM AND VICTORIA—Overseer, N. Brady, Lindsay.

Scugog Lake and River, and Pigeon Lake, and Pigeon Creek—Bass and Maskinonge.  
G.T.R. to Port Perry. Excellent hotel accommodation.

COUNTY OF FRONTENAC—Overseer, John Driscoll, Howe Island.

St. Lawrence River—Bass, Maskinonge and Pickerel.  
G.T.R. to Kingston. Hotels and boarding houses.

COUNTY OF FRONTENAC—Overseer, D. Cattenach, Wolfe Island.

St. Lawrence River—Black Bass and Maskinonge.  
G.T.R. to Kingston. Hotels.

COUNTY OF FRONTENAC—Overseer, William Craig, Glenburnie.

Crow Lake, Bob's Lake, and Green Bay—Bass, Pickerel, Pike, and Lake Trout.  
K. & P. Railway.  
Long Lake and Fourteen Island Lake—Bass, Pickerel, and Pike.  
K. & P. Railway.  
Desert, Birch, Canoe, Knowlton, Gould, Devil, Clear, and Buck Lakes—Bass and  
Salmon Trout.  
K. & P. Railway.  
Sydenham, Long, Eel, Cronk, and Bass Lakes—Bass and Pike.  
K. & P. Railway. Cottages and summer hotels. Camp.

COUNTY OF FRONTENAC—Overseer, George Clyde, Cataraqui.

Dog Lake—Salmon Trout and Black Bass.  
Boat through Rideau Canal. Hotels.  
Cranberry Lake—Bass.  
Boat through Rideau Canal. Farmhouses.  
Buck Lake—Salmon Trout.  
Boat through Rideau Canal. Farmhouses.  
Loughboro' Lake—Bass and Salmon Trout.  
Boat through Rideau Canal. Good hotel at Battersea.  
River St. Lawrence—Black Bass.  
Hotels at Kingston, and farmhouses.  
Upper and Lower Rock Lakes—Speckled Trout.

Boat through Rideau Canal. Hotels.

COUNTY OF GREY—Overseer, Adam Waddell, Leith.

Owen Sound Bay—Salmon Trout.  
C. P. R. to Owen Sound. Hotel accommodation.

COUNTY OF HALDIMAND—Overseer, A. Couper, Dunnville.

The outlet of the Grand River, and Lake Erie—Black Bass, Pike, Yellow Pickerel  
and Maskinonge.  
G.T.R. to Dunnville, Port Maitland and Cayuga. Hotels and farmhouses.

COUNTY OF HALDIMAND—Overseer, John Farrell, Cayuga.

Grand River and Lake Erie—Bass and Maskinonge.  
G.T.R. and Michigan Central. Hotels.

**COUNTY OF HASTINGS—District Overseer, J. K. McCargar, Belleville.**

Trent River—Bass and Maskinonge.  
G.T.R. to Campbellford. Hotels.  
Crow Bay—Pickerel and Maskinonge.  
Reached from Campbellford. Hotels and camp.  
Trent Bridge to Hastings, and west to Rice Lake—Bass and Maskinonge.  
G.T.R. Hotels at Hastings. Camp.  
Crow Lake—Bass and Maskinonge.  
C.O. Railway to Marmora Village. Hotels.  
Trout, Devil, and Dark Lakes—Lake Trout.  
C.O. Railway to Stola Station. Hotel. Camp.  
Wes'amacoom, and Eagle Lakes—Speckled and Lake Trout.  
G.T.R. to Bancroft, and by stage. Hotel. Camp.  
Eagun Creek—Speckled Trout.  
A few miles from Bancroft.  
Papineau River, and Lake St. Peter—Speckled Trout.  
Seven miles north of Maynooth. Stage.  
Springbrook, near Stirling—Speckled Trout.  
C.O. Railway. Hotel.

**COUNTY OF HALTON—Overseer, William Sargent, Bronte.**

Twelve and Sixteen Mile Creek—Black Bass.  
G.T.R. to Bronte. Hotel accommodation.

**COUNTY OF HURON—Overseer, James Yates, Goderich.**

Nine Mile River and Maitland River—Perch and Black Bass.  
G.T.R. to Goderich. Good hotel and cottage accommodation.

**COUNTY OF LAMBTON—Overseer, James Steed, Sarnia.**

Aux Sauble River at Port Frank—Bass, Perch, Pike and Maskinonge.  
G.T.R. to Forest or Thedford, then stage. Hotel accommodation.  
St. Clair River—Pickerel.  
G.T.R. to Sarnia and Port Lambton. Hotel accommodation.

**COUNTY OF LANARK—Overseer, W. J. Welsh, Carleton Place.**

Mississippi Lake and River—Black Bass, Pike, and Perch.  
C.P.R. to Carleton Place. Hotel accommodation.

**COUNTY OF LANARK—Overseer, D. Mair, Lanark.**

Mississippi River, Clyde River and Trout Lake—Bass.  
Cameron Lake and Trout Lake—Bass.  
C. P. R. to Perth. Hotels and Camp.

**COUNTY OF LANARK—Overseer, T. B. Norris, Bolingbroke.**

Christie's Lake—Bass and Pickerel.  
C. P. R. to Perth. Hotels.

**COUNTY OF LAMBTON—Overseer, Orlando Allan, Wallaceburg.**

Syne River—Black Bass, Silver Bass, Pickerel, Pike, and Perch.  
G.T.R. to Wallaceburg. Good Hotels.

COUNTY OF LENNOX—Overseer, W. D. Roblin, Adolphustown.

Bay of Quinte—Bass and Maskinonge.

G. T. R. to Belleville, Kingston and Picton. Hotels.

COUNTY OF LENNOX—Overseer, John Rennie, Napanee.

Hay Bay—Bass and Maskinonge.

G. T. R. from Napanee or Deseronto. Hotels.

COUNTY OF LEEDS—Overseer, Chas. O'Connor, Long Point.

Singleton, Long, Higgleton and Lively Lakes—Bass and Salmon.

G.T.R. and Brockville & Westport Railway to Lyndhurst. Farmhouses.

COUNTY OF LEEDS—Overseer, J. R. Gibson, Mallorytown.

St. Lawrence River—Bass, Pike and Maskinonge.

G. T. R., C. P. R., Vermont Central, N. Y. Central & Hudson River Hotels.

Charleston Lake—Bass and Trout.

B. & W. from Brockville. Hotels.

COUNTY OF LEEDS—O. V. Goulette, Gananoque.

St. Lawrence River—Bass, Maskinonge and Pickerel.

G. T. R. Hotels.

COUNTY OF LEEDS—Overseer, Geo. Bilton, Newboro'.

Upper Rideau, Wolf, Sand, Mud, Loon, Mosquito, Benson, Clear, Indian, and Opinicon Lakes—Bass, large and small mouthed.

Beverly, Hard, Rock and Devil Lakes—Bass.

G. T. R. and Brockville & Westport Railway, and by steamers "Rideau Queen" and "Rideau King" from Kingston, or C.P.R. to Smith's Falls. Hotels at Portland, Westport, Jones Falls, Chaffey's Locks and Newboro. Camp.

COUNTY OF LEEDS—Overseer, J. B. Smith, Charleston.

Charleston Lake—Bass and Salmon Trout.

G. T. R. to Brockville, and Westport Railway to Athens, then by stage to Charleston. Good hotel, accommodation. Camp.

COUNTY OF LINCOLN—Overseer, R. W. Hadgraft, Port Dalhousie.

Niagara River—Pickerel and Perch.

From Toronto by boat, or G. T. R. at Niagara Falls. Hotels.

Lake Ontario, at Port Dalhousie—Perch.

By boat or G. T. R. to Port Dalhousie. Hotels.

MANITOULIN ISLAND—Overseer, Richard Oliver, Little Current.

North Shore of the North Channel of Georgian Bay—Bass and Maskinonge.

C. P. R. to Killarney, and steamer.

LaCloche Island Lake—Bass.

Stage from Little Current.

Nellie Lake, Long Lake and Charlton Lake—Bass and Maskinonge.

There is good fishing all the way up the north shore, but no hotel accommodation until Algoma Mills is reached, 40 miles west of Little Current. Camp.

Manitou Lake on Manitoulin Island—Good Bass fishing, and Speckled Trout fishing in Blue Jay River.

C. P. R. to Killarney, and steamer.

MANITOULIN ISLAND—Overseer, T. Norquay, Manitowaning.

Hiawatha, Manitou and Lily Lakes—Trout, Bass and Pike.

Manitou River and Blue Jay River—Speckled Trout.

Drive from Manitowaning. Camp.

DISTRICT OF MUSKOKA—Overseer, H. Moore, Huntsville.

Lakes Mary, Fairy, Vernon, Peninsular, Hollow and Lake of Bays; also Muskoka River and East River—Black Bass fishing.

G. T. R. to Huntsville, then by steamboat.

Trout fishing in Lake of Bays and Hollow Lake and tributaries.

Salmon Trout fishing in season.

Hotel and farmhouse accommodation. Camp.

DISTRICT OF MUSKOKA—Overseer, J. H. Willmott, Beaumaris.

Sparrow Lake—Bass and Maskinonge.

G. T. R. to Severn River. Hotels and boarding houses.

Lakes in the Township of Wood—Bass principally.

Steamboat from Gravenhurst or Bracebridge to Bala. Camp.

Moon River—Bass, Pickerel and Maskinonge.

Steamboat from Gravenhurst or Bracebridge to Bala. Camp.

Musquosh River—Bass, Pickerel and Maskinonge.

Steamboat. Camp.

Big Wind Lake—Speckled Trout.

Drive from Bracebridge. Settlers' houses or camp.

Pine Lake—Large Speckled Trout.

Drive from Bracebridge. Settlers' houses or camp.

Trading Lake—Lake Trout and Speckled Trout.

G. T. R. to Huntsville. Hotels.

Lake of Bays—Speckled Trout and Lake Trout.

G.T.R. to Huntsville. Hotels, settlers' houses, or camp.

Lakes in Tp. of Freeman—Bass principally.

From Footes' Bay or Georgian Bay. Camp.

Three Mile Lake—Pickerel.

From Windermere. Camp.

Skeleton Lake—Lake Trout.

From Windermere or Rosseau. Hotels.

Leonard Lake—Bass, Pickerel and Lake Trout

From Beaumaris. Hotel.

Muskoka Lake—Bass, Pickerel and Lake Trout.

G. T. R. to Gravenhurst or Bracebridge; thence steamboat. Hotels.

Lake Rosseau (same).

Lake Joseph (same).

Vernon Lake—Lake Trout.

G. T. R. to Huntsville. Hotels, farm houses.

Peninsula Lake, G.T.R. to Huntsville. Hotel.

DISTRICT OF NIPISSING—Overseer, H. M. Legault, Sturgeon Falls.

Lakes Tomico, Cheboygan, Clear, Turner, Cache, Muskesuigue, Pike, and Lost—Bass, Pickerel and Maskinonge.



C. P. R. to Sturgeon Falls, then drive. Camping.

Wahnipitae Lake—Salmon Trout.

C. P. R. to Wahnipitae. Hotel accommodation.

Lake Nipissing and French River—Bass, Maskinonge, and Salmon Trout.

C. P. R. to Sturgeon Falls. Hotel accommodation. Camp.

DISTRICT OF NIPISSING—Overseer, S. A. Huntington, North Bay.

Nipissing, Trout, Pine, Nosbonsing and Nagle Lakes—Bass, Pickerel and Maskinonge.

Amable du Fond, Le Vase, Little Sturgeon, Sturgeon, Sand, French, Wolesley and Widow Rivers—Bass, Pickerel and Maskinonge.

Upper Amable du Fond and branches. Chippewa, Duchesne and Blue Sea Creeks and Jocko Waters—Speckled Trout.

Four Mile, Otter, Anderson, Mud, Moose, Red Pine, Elbow and Rib Lakes—Speckled and Grey Trout.

These lakes can all be reached by G.T.R. and C.P.R. and Temiscamingue Railways. Camp.

DISTRICT OF NIPISSING—Overseer, F. Baechler, Nipissing.

Lake Nipissing—Maskinonge, Bass, and Pickerel.

Perch, Sand, and Shoal Lakes—Black Bass.

G. T. R. to Calendar or North Bay.

C. P. R. to North Bay or Sturgeon Falls. Hotels and Camp.

DISTRICT OF NIPISSING—Overseer, John Armstrong, New Liskeard.

Tomagami Lake and River, and small lakes adjoining—Bass, Maskinonge and Speckled Trout.

Casaganique Lake—Pickerel, Speckled Trout and Bass.

Twin Lakes—Speckled and Grey Trout, Bass, Maskinonge and Pickerel.

Temiscamingue R. R. to New Liskeard. Hotels.

COUNTIES OF NORTHUMBERLAND AND HASTINGS—Overseer, C. S. Gillespie, Campbellford.

Trent River and Crow River—Bass and Maskinonge.

G. T. R. from Brockville or Peterboro. Good hotels.

COUNTIES OF NORTHUMBERLAND AND PETERBORO—Overseer, A. Skeen, Harwood.

Rice Lake—Maskinonge and Black Bass.

G. T. R. to Cobourg, and stage, and C. P. R. to Peterboro', and boat. Hotel.

COUNTY OF NORFOLK—Overseer, G. D. McCall, Vittoria.

Long Point Bay—Black Bass.

G. T. R. to Port Rowan, and St. Williams. Hotels.

M. THWAITE, Oshawa, District Overseer.

Lakes Simcoe and Couchiching—Bass, and Maskinonge.

G.T.R. Hotels at Barrie and Orillia.

Stony Lake—Bass, and Maskinonge.

G. T. R. Hotels and summer cottages. Camp.

Rice Lake—Bass and Maskinonge.

G. T. R. to Hastings. Hotel accommodation.  
 Scugog Lake—Bass and Maskinonge.  
 G. T. R. to Port Perry. Hotel accommodation.

COUNTIES OF ONTARIO AND DURHAM—Overseer, John Bowerman, Port Perry.

Lake Scugog—Maskinonge and Black Bass.  
 G. T. R. Hotels.

DISTRICT OF PARRY SOUND—Overseer, John Paul, Loring.

Pickereel River and Wilson Lake—Black Bass, Pickereel, Maskinonge and Lake Trout.  
 G. T. R. to Trout Creek Station, then stage. Hotel and farmhouses; camp.

DISTRICT OF PARRY SOUND—Overseer, J. A. Johnson, Parry Sound.

Mill Lake—Bass and Pickereel. Drive from Parry Sound.  
 Otter Lake—Bass and Pickereel. Drive from Parry Sound.  
 McCoy, Spider, Six Mile and Trout Lake—Bass and Pickereel.  
 C. A. R. or steamboat to Parry Sound. Camp.  
 Georgian Bay—Bass and Maskinonge.  
 The Canada Atlantic to Parry Sound. Hotel or camp.

DISTRICT OF PARRY SOUND—Overseer, R. Menzies, Burk's Falls.

Cebebe, Ahmic, and Lakes of Many Islands—Bass and Pickereel.  
 G. T. R. to Burk's Falls. Camp.  
 Magnetewan River, Loon, Grass, Duck, Long, Buck, East and Raven Lakes—Bass  
 and Pickereel.  
 G. T. R. to Burk's Falls. Camp.  
 Island, Crooked, Blue and North Lakes—Bass and Pickereel.  
 G. T. R. to Burk's Falls. Camp.

PELEE ISLAND—Overseer, William Stewart, Pelee Island.

Lake Erie—Bass in large quantities.  
 G. T. R. to Windsor or Amherstburg, and Lake Erie & Detroit River Railway to  
 Kingsville or Leamington, then by steamer. Hotels.

COUNTY OF PETERBORO'—Overseer, John Brown, Rockdale.

Lakes Crow, Belmont, Round and Kashbogni—Bass and Maskinonge.  
 Crow River, North River and Deer River—Bass and Maskinonge.  
 C. P. R. Hotel accommodation.

COUNTY OF PETERBORO'—Overseer, Thos. Nicholls, Hall's Bridge.

Lakes Ball, Chemong, Big Buckhorn, Little Buckhorn, Deer, and Deer Bay—  
 Bass and Maskinonge.  
 G. T. R. to Lakefield or Lindsay. Good hotel accommodation.  
 Lakes Sandy, Gull, Ketchum, Eagle, Gold, and Coal—Mountain or Lake Trout.  
 Stage from Buckhorn. Summer hotel accommodation.

COUNTY OF PETERBORO'—Overseer, P. W. C. Shewen, Apsley.

Eagle Lake—Salmon Trout.  
 Loon Lake—Black Bass.

Long, Trout, Bass, Gadge, and Dinner Lakes—Bass and Salmon Trout.  
 G. T. R. to Lakefield, and per steamboat to Mt. Julian. Camp  
 Jack's Lake—Black Bass and Salmon Trout.  
 G. T. R. to Lakefield and per steamboat to Mt. Julian. Camp.

COUNTY OF PETERBORO'—Overseer, J. W. McIntyre, Keene.

Rice Lake and Indian River—Black Bass and Maskinonge  
 G. T. R. to Keene or Hastings. C. P. R. to Havelock, stage two miles. Hotels;  
 camp.

COUNTY OF PETERBORO'—Overseer, F. J. Moore, Lakefield.

Cachewamuck, Clear, Lovesick, Stoney, and White Lakes—Bass, Trout and Mas-  
 kinonge.  
 G. T. R. to Lakefield. Hotels.

COUNTY OF PRINCE EDWARD—Overseer, M. Clark, Picton.

Consecon Lake, East and West Lake, and Bay of Quinte—Bass, Pickerel and Mas-  
 kinonge.  
 G. T. R. to Deseronto, Belleville and Kingston. Hotels  
 Rainy River District—Overseer, John Nash, Rat Portage.  
 Cameron Lake, Brooks Lake, Summit Lake, and Cross Lake—Black Bass.  
 Otter Lake—Trout and Bass.  
 Little Pine Lake—Maskinonge.  
 Big Pine Lake—Maskinonge and Trout.  
 Dog Tooth Lake—Trout.  
 South of Rat Portage by steamer through Lake of the Woods. Camping out.  
 Pickerel Lake—Speckled Trout.  
 Buzzard Lake—Lake Trout.  
 East of Rat Portage, via C.P.R., to Gilbert Station. Camping out.  
 Lakes Silver, Favel, Delancy and Boulder—Speckled Trout.  
 Canyon Lake—Maskinonge.  
 Linklater Lake—Brook Trout.  
 North and north-east of Rat Portage, C. P. R. to Margach Station.  
 There are many other lakes abounding in Trout and other fish. All these waters are  
 practically virgin ground. Camping out.

RIDEAU WATERS—Overseer, J. C. Judd, Morton.

Sydenham Lake—Pike.  
 K. & P. Railway from Kingston to Harrowsmith. Hotels.  
 Long Lake—Bass, Salmon, Trout and Pickerel.  
 Canoe Lake—Bass, Pike and Salmon Trout.  
 Rock, 13 Island, Desert, White, Cole and St. Andrew's Lakes—Bass and Pike.  
 K. & P. to Vernon Station. Hotels.  
 Sand and Wolf Lake—Bass, Pike, Salmon Trout and Pickerel.  
 B. & W. to Westport. Hotels.  
 Bob's Lake—Bass and Salmon Trout.  
 Eagle Lake—Bass, Salmon Trout and Pickerel.  
 Duncan Lake and Crow Lake—Bass.  
 K. & P. to Tichborne Station. Boarding houses.  
 Long, Sharbot, St George, White and Silver Lakes—Bass and Salmon Trout.  
 K. & P. to Sharbot Lake Junction. Hotels.

Cross Lake and Crutch Lake—Bass and Salmon Trout.  
 K. & P. to Clarendon Station. Hotels.  
 Trout Lake—Salmon Trout and Bass.  
 K. & P. to Levant Station. Hotels.  
 Round Lake and Clyde Lake—Bass and Pike.  
 Calabogie Lake—Bass, Pike and Maskinonge.  
 K. & P. to Clyde Forks Station. Hotels.  
 Brule, Fortune, Schooner, McKay and Burl Lakes—Bass, Salmon Trout and Speckled Trout.  
 K. & P. to Levant Station, and stage to Plevna. Farmhouses.  
 Cranberry, Dog and Loughboro Lakes—Bass, Pike and Salmon Trout.  
 Rideau Navigation Company from Kingston. Hotels.  
 Whitefish, Sand, Crow, and Troy Lakes—Bass and Pike.  
 Rideau Navigation Company from Kingston. Hotels.  
 Opinicon, Indian, Benson, Rock, Mosquito, Clear and Mud Lakes—Bass and Pike.  
 Rideau Navigation Company. Hotels.  
 Otta, Bass and Otter—Bass, Pike and Salmon Trout.  
 Rideau Navigation Company. Hotels.  
 Charleston Lakes—Bass and Salmon Trout.  
 Brockville & Westport Railway to Athens. Hotels.  
 Beverley Lake—Bass and Pike.  
 Brockville & Westport Railway to Delta. Hotels.

COUNTY OF STORMONT.—Overseer, Isaac Blondin, Cornwall

St. Lawrence River and Lake St. Francis—Bass, Pike, Maskinonge and Pickerel.  
 G. T. R. to Cornwall or Lancaster., Summer hotels.

COUNTY OF VICTORIA.—Overseer, A. Trotter, Bobcaygeon.

Sturgeon Lake and Emily Creek—Bass, Maskinonge, Perch and Catfish.  
 G. T. R. to Lindsay or Fenelon Falls. Hotel accommodation.  
 Pigeon Lake, Little and Big Ball Lakes and Buckhorn—Bass, Maskinonge, Perch and Catfish. Good hotel accommodation.

COUNTIES OF SIMCOE AND ONTARIO.—Overseer, John Steele, Uptergrove.

Simcoe, Couchiching, St. John and Little Mud Lakes—Bass, Perch, Pickerel, Maskinonge and Lake Trout.  
 G. T. R. to Sutton, Beaverton, Orillia and Barrie. Hotels; camp.

COUNTY OF SIMCOE.—Overseer, F. Terry, Queensville.

Holland River—Black Bass and Maskinonge.  
 G. T. R. to Newmarket, then stage.  
 Lake Simcoe—Bass and Maskinonge.  
 G. T. R. to Jackson's Point, Lefroy, etc. Good hotel and summer boarding houses.

COUNTY OF SIMCOE.—Overseer, Felix Labatt, Victoria Harbor.

Lakes Gloucesterpool, Six Mile, Crooked, Black, and Burrows, and River Severn; and also along the shore of Georgian Bay, from Port Severn to Moon River—Black Bass, Maskinonge, Pickerel, and Pike.  
 G. T. R. to Penetang, Midland or Waubauskene, then boat. Hotel and summer boarding houses.



COUNTY OF SIMCOE.—Overseer, Wm. Pratt, Penetanguishene.

Hog Creek—Speckled Trout.  
 G. T. R. to Victoria Harbor. Hotels; camp.  
 Severn River and Lake—Black Bass, Pike and Maskinonge.  
 G. T. R. to Wabauskene or Severn Bridge. Hotel; camp.  
 Honey Harbor—Bass, Pike, Maskinonge and Pickerel.  
 G.T.R. to Midland. Hotel; camp.  
 McRae's Lake and River—Bass, Maskinonge and Pickerel.  
 G. T. R. to Midland. Hotel; camp.  
 Crooked and Six Mile Lake—Bass, Maskinonge and Pickerel.  
 G.T.R. to Midland. Hotels.  
 Muskoka River and Black River—Bass and Pickerel.  
 G. T. R. to Midland. Hotels.  
 Cognashene Lake—Bass and Pickerel.  
 G. T. R. to Midland. Hotels.

COUNTY OF SIMCOE.—Overseer, Patrick Howard, Collingwood.

Nottawasaga River and Bay—Bass fishing.  
 Mad, Noisey, Pretty and Beaver Rivers, and Silver Creek—Brook Trout.  
 G. T. R. Hotel accommodation at Collingwood and Thornbury.

DISTRICT OF THUNDER BAY.—Overseer, Wm. McKirdy, Nepigon.

Lake Nepigon, Sand, Wabmosh and Nepigon Rivers, Fraser Creek and Trout  
 Creek—Speckled Trout.  
 Bass Lake—Bass and Speckled Trout.  
 C. P. R. to Nepigon Station. Hotels; camp.  
 Mazokama, Cyprus and Gravel Rivers—Speckled Trout.  
 C. P. R. Camp.  
 Steele and Pearl Rivers, Coldwater and Cleg Lakes—Speckled Trout.  
 C. P. R. to Pearl Station. Camp.  
 Loon Lake, with some smaller lakes in immediate vicinity—Good Trout and Bass  
 fishing.  
 C. P. R. to Pearl Station. Camp.  
 Mackenzie River, east of Port Arthur—Speckled Trout.  
 C. P. R. to Port Arthur. Camp.  
 Most of these lakes are literally full of Brook Trout.

## REPORT OF THE CAPTAIN OF THE CRUISER "GILPHIE."

S. T. Bastedo, Esq., Deputy Commissioner of Fisheries :

Sir,—I have the honor to submit my annual report of the work\* performed by the Fisheries Protection Steamer "Gilphie" for the season 1903.

We commenced fitting up the boat on the 23rd March, and were all ready for work on the 1st April, but the weather was so bad that we were unable to put to sea before Monday, the 6th. We managed to reach Cape Rich, but had to return as far as Wiarton, where we remained for the night. On the following day we went to Collingwood, calling at Meaford, where we found three tugs waiting for the abatement of the stormy weather before leaving for Point au Baril, and the Bustards. We left Collingwood the following morning, and visited Cedar Point and Thunder Bay, where we found a few fishermen preparing for work, and arrived at Penetang at 5 p.m. We learned that the ice had not left the inside channel between Minnecognashene and Moon Island, so we remained at Penetang until Monday, the 13th, when we proceeded to Midland, calling at Present and Beausoliel Islands. On Tuesday we went to Miners' Lake, calling at Minnecognashene and Maxwell Islands, without discovering any illegal fishing; but the following day we succeeded in finding three trap nets at Waubuno Island, which we burned. Again, on each of the following days we captured some nets, one very large trap near the Iron City Club House, and three more near Copper Head. On Monday, the 20th, we left Parry Sound for Point au Baril, where we arrived at 7 p.m., after making a careful search for nets in Shawanga Bay, but did not find any, although there was every evidence of fishing having been recently carried on. We returned again on the following morning, and saw several men running into the bush. We also found fish and the lines off seines, as well as boats; but the weather was very unfavorable, and we were therefore unable to locate the seines, which were no doubt sunk in the water. The following morning we left Shebeshekong, and visited Campbell's Rock and Sandy Islands, but the wind was too strong to admit of using our boats. We then proceeded to Sans Souci, where we placed some channel buoys. On the following day we placed more buoys at Jubilee and Alexander Islands, also at Superior Shoal and Miner Rocks, arriving at Muskoka Mills at 6 p.m. On the following days we made a search of North and South Honey Harbor, and found several pike gill nets. We also saw where several trap nets had been recently removed. We left Penetang on Monday morning, the 27th, for Midland, where we took on coal, returning to Penetang the same evening. On the following day we visited Moon River, and found one trap net near Whistler's Bay while en route. We left again the following morning, calling at Waubuno Island, Copper Head, and Sans Souci, arriving at Depot Harbor at 6 p.m. The next day we left for Point au Baril, after making a thorough search of Shawanaga Bay.

Friday, the 1st May, was too rough for us to leave Point au Baril, but the following day we patrolled as far as Byng Inlet, and on Sunday went to the Bustard Islands. On Monday, the 4th May, one of the boats went over to Bad River, while the other was engaged in searching among the islands, and between them they succeeded in finding 26 trap nets. Tuesday was too rough to do any further work, and on Wednesday we proceeded to Killarney by way of Beaverstone, where we made a diligent search for nets, but without success. On Tuesday, while in McGregor's Bay, we caught several of the Wekwimikong Indians, who had been seining, but as they were unable to pay a fine, and their seines were thrown overboard, we let them go. On Friday and Saturday we had the two boats searching for nets in McGregor's Bay and Whitefish River, and reached Little Current at 7 p.m., where we remained over Sunday. Overseer Oliver and his assistant were helping us.

The following week was spent in patrolling the Badgley Channel, Shawanaga Bay, Shebeshekong, around Campbell Rock, San Souci, Jubilee Islands, Gohome River, and Minnecognashene, arriving at Midland at noon on Saturday, where we took on coal

and then proceeded to Penetang, where we remained over Sunday. On Monday we succeeded in finding four trap nets at Giant's Tomb, and on Tuesday at the Watchers' Island we captured four more. On Wednesday we visited the Christian Islands, Meaford and Collingwood, and on Thursday, the 21st, went to Owen Sound, where the boat was placed in the dry-dock to be caulked and repaired.

We left Owen Sound again on Tuesday, the 2nd June, patrolling as far as Tobermory, and the remainder of the week was spent patrolling around the Manitoulin Island. We remained at Little Current over Sunday. On Wednesday, the 10th, we found three trap nets in Manitowaning Bay, and on Friday got three seines at Killarney. On Monday, the 15th, we patrolled from Byng Inlet to Dillon's Point, and on Tuesday, while at Sandy Island, we captured three trap nets, which were full of Whitefish. Again on Thursday, the 18th, we found one trap net near Waubuno Island, and on the following day four more were found, two near Cognashene Point, and the other at Espabekong Island. We left Penetang on Monday, the 22nd, and captured one trap net at Sturgeon Point, and on the following day we got three more in Sturgeon Bay. On Wednesday we patrolled as far as Midland without finding any nets, but on Thursday we captured three trap nets in Matchedash Bay. On Friday got two more in Cognashene Lake, and again on Saturday we succeeded in finding another trap net at Split Rock. The following week was spent patrolling among the islands on the north shore as far as Little Current, where we arrived at 5 p.m. on Saturday.

On Monday, the 6th July, we left Little Current with Overseer Oliver on board, and we spent the whole week in making an inspection of his division, but found nothing irregular. We left Little Current again on Monday, the 13th, and spent the week in patrolling all the waters between there and Penetang. We left Penetang again on the 20th July, calling at Minnecognashene, Maxwell Islands, Go-home, Copperhead, Sans Souci, and Campbell's Rock, and on Tuesday visited Sandy and Umbrella Islands. Wednesday was spent searching through Shebeshekong Channel and Shawanaga Bay, and Thursday Bayfield Harbor, where we found one trap net; and on Friday, while at Limestone Island, we captured another trap net. On Saturday we searched Shebeshekong Channel and Shawanaga Bay, arriving at Parry Sound at 6 p.m. We left Parry Sound on Monday morning, and devoted the whole week to patrolling among the islands and bays, reaching Midland at 2 p.m. and Penetang 6 p.m. on Friday. Saturday was spent in washing out the boiler, and fixing things up generally.

On Monday, the 3rd August, we found two trap nets at Giant's Tomb. We also visited Cedar Point and Christian Island. On Tuesday we patrolled as far as Collingwood, and on Wednesday went to Owen Sound, where we took coal. We went as far as Wiarton on Friday, and spent Saturday in company with Overseer Stephens inspecting the waters of his division. We left Wiarton on Monday morning, and visited the Cape Croker Indian Reserve, arriving at Meaford at 7 p.m., and on Tuesday we tried to reach Christian Islands, but were obliged to put into Thornbury for shelter, where we had to remain until Thursday, owing to rough weather. The remainder of the week was spent patrolling around Christian Island, Cedar Point, Thunder Bay, and Whaleback Channel, arriving at Penetang at 6 p.m. Saturday, after taking on coal at Midland. On Tuesday, the 18th August, we captured two trap nets on the north side of Batteau Channel, and on Thursday got another at Bad River. On Monday, the 24th August, we went to McGregor's Bay, and there succeeded in finding a trap net, and on Wednesday visited Manitowaning Bay, and found another trap net. And again on Thursday, while at Beaverstone, we picked up another net. We continued searching until we reached Parry Sound, on Saturday, where we remained over Sunday. On Monday we went to Palestine Islands, and searched with the boats around Sandy and Batteau Islands, and on Tuesday we captured two trap nets at Sandy Island. Wednesday and Thursday were spent in patrolling as far as Maxwell Islands, and on Friday the two boats proceeded to search for nets. One went to Giant's Tomb, and the other searched among the islands, and they succeeded in finding two trap nets, and then proceeded to Penetang. The following week was spent in patrolling the several



harbors and around the islands up to Parry Sound, where we arrived on Saturday at 5 p.m.

On Monday, the 14th September, we left Parry Sound for Penetang, calling at Hope Island, and on Tuesday went to Owen Sound, where we were obliged to remain until Friday, owing to rough weather. We then went to Wiarton, and on Saturday took Overseer Stephens over his district. On Tuesday, the 22nd September, we arrived at Tobermory, where we were storm-bound until Friday, when we proceeded to the Manitoulin Island, arriving at Little Current on Saturday at 2 p.m. We devoted the following week to patrolling around the Manitoulin Island and the North Shore as far as Parry Sound, where we arrived on Saturday at 5 p.m.

We left Parry Sound on Monday, the 5th October, and made diligent search during the week between there and Penetang without coming across any illegal nets. On Tuesday, the 13th October, we found one large trap net off Sawlog Point, and on Wednesday got three more near Sturgeon Point. Thursday was Thanksgiving Day, and we remained in Victoria Harbor. On Friday we found a few pike nets in Honey Harbor, and on Saturday we went to Midland and took on coal, and then proceeded to Penetang. On Monday, the 19th October, we left Penetang, but were unable to get past Moose Deer Point for two days, owing to heavy seas, but got to Point au Baril on Wednesday, where we learned that most of the fishermen left for home, as the weather was bad and the fishing poor. We went to the Bustard Islands on Friday. Wind blowing very hard. On Saturday afternoon we captured one trap net at Bad River, and also caught an Indian fishing illegally, whom I fined \$10. The weather was very bad, and our boat had several narrow escapes from being swamped. We continued our search for nets at the Bustards and vicinity during the following week, and on Wednesday we found another trap net at Bad River. We chased several Indians who were fishing in Black Bay on Friday, and when we reached Grumble Point we caught one of them, and fined him \$10, besides confiscating his fish, which we sold for \$5.

On Tuesday, the 3rd November, we caught a man from Killarney fishing illegally in Black Bay, and imposed a fine of \$10 on him. We saw several other boats, but were unable to get near them. The remainder of the week was too stormy to put out, and we were obliged to go into French River for supplies on Saturday. The following week was also too stormy for anyone to move out, and as no boats were arriving provisions got very scarce. On Sunday, the 15th November, however, the steamer "Jones" arrived, and relieved the situation somewhat, and on Tuesday afternoon the wind abated sufficiently to allow us to go to Point au Baril, where we found that all the fishermen had left. On Wednesday we passed through Shawanaga Bay and Shebeshekong Channel, and on to Campbell's Rock. On Thursday and Friday there was a snowstorm, and it was with difficulty we got our course, but managed to reach Penetang at 5 p.m. on Friday, where we remained until Monday morning, winding up the business for the season.

On Monday, the 23rd November, there were sleet and rain, which turned to snow. We, however, worked our way to Thunder Bay, and Tuesday managed to get to Christian Island, although it still snowed and blew a gale. We started out on Wednesday, but were obliged to return for shelter after gaining five miles. We had to remain until Wednesday, when we managed to reach Wiarton at 5 p.m. On Saturday, the 28th November, we made a tour among the islands, and caught an Indian fishing at Whitecloud Island with a net. I fined him \$10, and then returned to Wiarton.

We spent Monday, Tuesday and Wednesday patrolling around the islands, and reached Owen Sound at 5.30 p.m. Wednesday, the 2nd December. On Thursday I received instructions to lay the boat up for the winter, which we proceeded to do, and on the following Tuesday all the work was completed. The boat was handed over to Messrs. Abbey Bros., and the crew were dismissed.

Your obedient servant,

M. A. McAULAY,

10th December, 1903.

Captain.



## NEPIGON TROUT.

A paper by Mr. William McKirdy, Ontario Government Fishery Overseer at Nepigon, read at the annual meeting of the North American Fish and Game Protective Association, held at Ottawa on the 21st and 22nd January, 1903:

So much has been written about the Nepigon and its Trout by much abler writers than I, that I feel some diffidence in preparing this paper, but I have the consolation of knowing that each one handles the subject as it appears to him, and I trust that my paper may present some new colorings and facts that have not appeared to others.

The average size of Nepigon Trout has been for many years two and a half pounds (2½), the largest accredited fish caught on the river, eight and a quarter pounds (8¼), although some larger have been reported. To the angler used to fishing other streams, these are extraordinary fish. In fact, many visiting the stream for the first time have said it was a salmon proposition in the matter of the size of the fish, and the tackle necessary to hold them, which is really the case. Nor is it to be wondered at, that the Nepigon is the home of these beauties. As the conditions are unique—no more favorable ones could be found in the world—the Brook Trout, in sympathy with these surroundings, have excelled their kind.

Nepigon Lake, the head waters of the St. Lawrence, is some eighty miles long by fifty wide, with a coast line equal to that of Lake Ontario; the water is of the clearest and purest, and studded with bold, rocky islands, capped with the stately spruce and graceful birch. Here the finny tribe thrive, as the lake is filled to overflowing with Whitefish, Lake Trout (some of the latter have been caught weighing forty pounds), and last, but not least in importance, the Brook Trout (*Salvelinus fontinalis*), varying with their surroundings in size and beauty. It is stated by old residents on the lake that Brook Trout weighing from ten to twelve pounds have been caught on the spawning beds, and to give an idea of the quantity of these fish, I have mapped out some twenty miles of spawning beds, and in doing so, have only shown a portion of them. A gentleman traversing the lake during September told me he passed through an extraordinary large school of Brook Trout; this was before the spawning season, which commences on the lake about the 15th of October. Most of the streams emptying into the lake have no trout in them, except in the higher reaches; there is one exception, however, viz., Sand River, a wide, rapid stream on the northwest corner. Here, I understand, the stream is full of these Trout, equal in size and beauty to those of the Nepigon River. Lake Nepigon will, no doubt, become a great tourist resort. Its ideal camping places on the numerous islands and beautiful bays, together with the delightful cool nights in the hottest parts of the season (one can always enjoy a good supply of warm blankets), possessing the charms of nature untrammelled by civilization, yet within easy reach of modern travel.

The Nepigon River is simply an outlet to the lake, three to four hundred feet wide, forced in a great measure through rocky formations, preserving its clearness while leaping over foaming falls, dancing over surging rapids, losing itself in placid lake expansions, repeating itself thus as it dashes through towering precipitous rocks, where its deep green water lends a charm that is not easily forgotten in its forty miles' course to Lake Superior, dropping 315 feet in that distance.

The Government has preserved the stream in its natural beauty, only the necessary camping grounds being cleared for that purpose. An overseer is constantly patrolling the river, whose duties are to see that there is no abuse of the fishing privileges, that all camps are kept clean and all refuse burned, so that when a camp is left by one party, it is in readiness for the next. His duty is also to facilitate in any way possible, by information and courtesy, the pleasure of the anglers. For some years back it has been found that Pike were on the increase, and threatened to do serious damage to the trout. Last year a raid was made on them in their haunts by netting these places. Thousands of these Pike were caught, of weights

varying from four to twenty-five pounds. I have measured them from four to five feet long.

Your society aims at preserving the game and fish of America ; I think there is a great work for you. I can look back to the time when I was a boy, and remember the splendid fishing in streams about home ; and those days have gone, and so has the fishing, and the work you have undertaken is to produce these conditions as far as possible, and preserve those that are as nature left them. It seems to me that if there could be left a small wooded belt along our streams, even a very narrow one, this would not interfere with the general utility of the land, in fact, would improve it, and would be the means of preserving our streams to a very great extent.

I have noticed that in every lake and every principal stream (and smaller ones emptying into it) where Trout are found that each one has Trout peculiar to itself. Great care is taken by breeders of cattle and other domestic animals to raise only the best ; why not so the Trout ? And if the Nepigon Trout is the finest and gamest fish in the world, why not stock our depleted lakes and streams with it ?

There are no such possibilities for securing spawn known as in Lake Nepigon, with its miles of spawning grounds. Nets could be thrown around them, and spawn could be secured in quantities to stock America, if possible. The Nepigon River is itself one vast spawning bed on all its rapid portions. I passed over half a mile of water at the foot of Pine Portage where the fish fairly covered the whole stream, shining out with their gorgeous fall colorings, a sight long to be remembered.

## SCHEDULE OF FISHERY OVERSEERS IN THE PROVINCE OF ONTARIO.

## DISTRICT OVERSEERS.

Name.	Residence.	Districts.
Angus Macaulay..	Southampton ....	Province of Ontario.
J. C. Judd.....	Morton ....	That part of the Co. of Frontenac lying north of the Twps. of Kingston and Pittsburg; the Twps. of North and South Crosby, Bastard, South Elmsley and Kitley in the Co. of Leeds, the Counties of Lanark, Carleton, Russell, Prescott, Glengarry and Stormont, and for those portions of Dundas and Grenville lying north of C. P. R.
Peter Lamarsh . .	Wheatley .....	Twps. of Anderdon, Malden, North Colchester, S. Colchester, N. Gosfield, S. Gosfield, and Mersea, in the Co. of Essex, with jurisdiction over so much of the waters of the Detroit River and Lake Erie as lies in front of said Townships.
Hy. Mathen .....	Brockville.....	That portion of Co. of Frontenac lying south of the Twps. of Portland and Storrington; for the Twps. of Leeds, Lansdowne, Front of Escott, Rear of Escott and Yonge and Elizabethtown, Co. of Leeds and for those portions of the Cos. of Dundas and Stormont lying south of the C. P. R.
J. K. McCargar . .	Belleville.....	Counties of Hastings, Lennox, Addington and Prince Edward and the Electoral district of East Northumberland.
Wm. Pratt .....	Penetang.....	County of Simcoe and Districts of Muskoka and Parry Sound, and all waters and islands in Georgian Bay fronting said counties.
M. Thwaite .....	Oshawa .....	Counties of Ontario, Durham, Victoria, Peterborough, Provincial County of Haliburton and Electoral District of West Northumberland, including the waters of Lakes Simcoe and Couchiching.

## LOCAL OVERSEERS.

O. Allan .....	Wallaceburg .....	County of Kent, fronting on Lake St. Clair, exclusive of Dover West Tp., also Walpole and St. Anne's Islands, Co. Lambton.
Jas. Avery .....	Dorset .....	Districts of Muskoka and Haliburton.
J. Armstrong ....	Thornloe .....	Temiscamingue and tributaries.
Fred Baechler ....	Nipissing .....	South River and South Bay, Lake Nipissing.
Henry Barr ....	Douglas .....	County Renfrew and Tps. of Nipissing District lying east and south of Algonquin Park.
George L. Bailey .	Callandar .....	Lake Nipissing, in the Districts of Parry Sound and Nipissing.
A. W. Bate .....	St. Catharines....	County of Lincoln.
Geo. Bilton .....	Newboro .....	Tps. of North Crosby, South Burgess, South Elmsley and over the Rideau waters as far as Smith's Falls.
I. Blondin.....	Cornwall.....	Cos. Stormont and Glengarry and St. Lawrence River,
J. Bowerman ....	Port Perry .....	Tp. of Reach, Co. Ontario, and Tp. of Mariposa, Co. Victoria, also River Scugog, and joint jurisdiction over Lake Scugog.
Nicholas Brady...	Lindsay .....	Tps. of Emily, Ops, Co. Victoria.
John Brown .....	Rockdale.....	Tps. of Belmont and Methuen, County Peterboro'.
Frederick Brown .	Baysville.....	Tps. MacLean, Ridout, Franklin and Brunel.

SCHEDULE OF FISHERY OVERSEERS.—*Continued.*

Name.	Residence.	District.
Elisha Brown....	St. Marys.....	That part of Thames and Avon Rivers and tributaries lying within the Townships of Downie, Fullerton and Blanshard.
D. Cattanach.....	Wolfe Island.....	Township of Wolfe Island and for the islands of Simcoe, Garden and Horseshoe, and any other islands comprised in the Tp. of Wolfe Island, with jurisdiction over the waters of the River St. Lawrence and Lake Ontario surrounding the said Tp. of Wolfe Island and the islands comprising the same.
Edw. Charpentier.	Sutton West .....	Tp. of Georgina, County of York.
M. Clark.....	Picton .....	Co. of P. E. Island, exclusive of the Twps. of Ameliasburg and Sophiasburg.
A. Clunis .....	Claude .....	In and for the Tps. of Chinguacousy, Caledon and Albion in the County of Peel.
Geo. Clyde.....	Cataraqui .....	Tps. of Pittsburgh and Kingston, Co. of Frontenac.
A. Corsant.....	Masonville .....	Co. Middlesex, East of boundary line between the Tps. of Westminster and Delaware, London and Lobo.
J. B. Cousineau ..	Windsor .....	For Tps. of Sandwich West, Sandwich East, Sandwich, Maidstone, Rochester and Tillbury West, Co. Essex.
Arch. Couper.....	Dunnville .....	Tps. of Moulton, Sherbrooke and Wainfleet, in the District of Monck, and Lake Erie.
Wm. Craig.....	Glenburnie .....	Tps. of Storrington, Loughboro, Portland and Bedford Co. Frontenac.
John Crotty.....	Bothwell .....	River Thames and waters tributary thereto lying between the Village of Wardsville and the boundary line between the Tps. of Delaware and Westminster.
H. Davieau .....	Michipicoten Har.	Michipicoten Island.
Chas. de Laronde.	Nepigon.....	Nepigon River and tributaries.
J. Dickson .....	Westwood.....	That part of Trent River and tributaries lying between Rice Lake and Trent Bridge, Co. Peterboro'.
W. J. Donaldson ..	Donaldson Mills ..	Tps. of Palmerston, Clarendon, Barrie, Miller, North Canonto, and South Canonto, electoral district of Addington.
John Driscoll.....	D'Arcy.....	The waters of St. Lawrence River around Howe Island.
W. Drummond.....	Keene.....	County of Peterboro.
H. Duchesne .....	Treadwell .....	Counties of Prescott, Russell, Stormont and Glengarry, with jurisdiction over so much of the Rivers Ottawa and St. Lawrence as lies in front of said Counties.
Joseph Ellis.....	Fort Erie .....	In and for the Electoral District of Welland, with jurisdiction over so much of the waters of Lake Erie and the Niagara River, exclusive of the waters of the said river north of the Niagara Falls, as lies in front of the said Electoral District.
John Farrell .....	Cayuga .....	Grand River from division line between Tuscarora and Onondaga Tps. and Oneida and Seneca Tps. to its mouth and waters tributary thereto, also for Tps. of Dunn and South Cayuga.
A. J. Flood .....	Delta .....	Upper and Lower Beverley lakes and rivers.
John Free.....	Byng Inlet .....	Magannetawan River and waters of Georgian Bay in vicinity of Byng Inlet.
R. Flynn.....	Mountain Grove.....	Tps. of Hincksbrooke, Oso, Olden and Kennebec, district of Addington.



SCHEDULE OF FISHERY OVERSEERS.—*Continued.*

Name.	Residence.	District.
S. Freeman .....	Brighton .....	Lake Ontario fronting Counties of Northumberland and Durham, also inland waters tributary to said lake in the above counties.
Wm. Gardner....	McDonald's Corn's	Tps. of Dalhousie and North Sherbrooke, Co. Lanark.
Joseph Gerow ....	Port Perry .....	Tps. of Cartwright and Manvers, Co. Durham, also River Scugog, and joint jurisdiction over Lake Scugog.
Chas. M. Gibson..	St. Catherines ...	County of Lincoln.
J. R. Gibson .....	Mallorytown .....	River St. Lawrence, lying between Mallorytown Landing and Brockville.
J. W. Gibson.....	Strathroy .....	Co. of Middlesex.
C. S. Gillespie.	Campbellford.....	Trent River and tributaries,
O. V. Goulette ...	Gananoque .....	Gananoque River and for that part of the River St. Lawrence, lying between Wolfe Island and Rockport.
J. R. Graham....	Fenelon Falls ....	Tps. Verulam, Fenelon, Eldon, Bexley, Sommerville, Laxton, Digby, Dalton and Longford, Co. Victoria, and Tp. of Lutterworth, Co. Haliburton.
A. Guerord .....	Bonheur .....	Provisional Judicial District of Rainy River which lies east of the 5th meridian line, and for so much of the said district as lies between the 5th and 7th meridian line south of a line running due east from One Side Lake to White Fish Lake.
R. Hadgraft .....	Port Dalhousie ..	County of Lincoln and over so much of the waters of Lake Ontario as lies in front of the said county, and with jurisdiction over the Niagara River between its mouth and the Falls.
P. Howard .....	Collingwood .....	Tps. of Collingwood and Osprey, Co. Grey, and Tps. of Nottawasaga and Sunnidale, Co. Simcoe, and Georgian Bay.
Andrew Hughson.	Orangeville .....	County of Dufferin and Tps. of Tossorontio, Adjala, and Tecumseth, County of Simcoe.
S. A. Huntington.	North Bay .....	Lake Nipissing and tributaries thereto in district of Nipissing.
J. A. Johnson....	Parry Sound .....	For the Tps. of Shawanaga, Burpee, Hagerman, Ferguson, Carling, McDougall, McKellar, Christie, Foley, Parry Island, Cowper and Conger in the District of Parry Sound.
F. Johnstone ....	Harwood .....	Tps. of Hamilton and Alnwick, Co. Northumberland, and over Rice Lake.
Henry Johnson ..	Brantford .....	That part of Grand River lying between the southerly boundary of Town of Galt and the boundary line between Tuscarora and Onondaga Tps. in Co. Brant and the Tps. of Seneca and Onondaga in Maldimand Co.; also concurrent jurisdiction with Overseer Messecar over Tributaries to the Grand River in Burford, Oakland and Brantford Tps. West of the Grand River.
Joseph Kinder....	Rockingham.....	Lake Charlotte, Tp. Brudenell, Co. Renfrew.
F. Labatt .....	Victoria Harbour.	Tps. of Freeman, Gibson, Baxter, Wood and Morrison. in Dist. of Muskoka; also over Severn River.
J. K. Laird....	Guilds.....	Lake Erie fronting Co. Kent, together with inland waters of said Co. tributary to Lake Erie.
E. T. Loveday....	Ottawa.	In and for the Tps. of Nepeau, Gloucester, North Gower and Osgoode, in the Co. of Carleton, with jurisdiction over so much of the River Ottawa and the River Rideau and Rideau Canal as lies in front or within the said Tps. and over the tributaries to the said rivers and canals.

SCHEDULE OF FISHERY OVERSEERS.—*Continued.*

Name.	Residence.	District.
H. M. Legault....	Sturgeon Falls ...	Dist. of Nipissing, North and West Tps. of Widdifield, Merrick, Stewart and Osborne, exclusive of Lake Temiscaming and tributaries.
A. B. Messecar ..	Burford.....	County of Brant, comprising Tps. of Burford, Oakland and Brantford, west of Grand River, but exclusive of said river.
David Mair ....	Lanark ....	Tps. of Drummond, Lanark, Darling and Lavant, Co. Lanark.
J. Massales .....	Haliburton ....	Pro. Co. of Haliburton, exclusive of Lutterworth Tp.
R. Menzies .....	Burke's Falls ....	Tps. of Lount, Machar, Laurier, Croft, Chapman, Strong, Jolly, Spence, Ryerson, Armour, Proudfoot, Monteith, McMurrich, Perry and Bethune, District of Parry Sound.
B. B. Miller .....	Warton.....	North Bruce Peninsula.
F. J. Moore ...	Lakefield .....	Tps. of Druro, Drummer, east part of Smith, Tp. of Burleigh and east half of Harvey, Co. Peterboro'.
H. Moore.....	Huntsville.....	Tps. of Stephenson, Stisted, Chaffey, Sinclair and Brunel.
Jas. Myers.....	Orchard .....	Tps. of Proton, Egremont and Normondy, Co. Grey and Tps. Minto, Arthur and West Luther, Co. Wellington.
M. A. McAulay..	Southampton. ....	Co. Bruce fronting Lake Huron lying between Southampton and Tobermory Harbour.
G. D. McCall.....	Vittoria .....	County of Norfolk, and Tps. of Walpole and Rainham in County of Haldimand, also waters of Lake Erie in front of said Co. and Tps.
A. McComber ...	Port Arthur .....	District of Thunder Bay.
Neil McDougall ..	Port Arthur.....	District of Thunder Bay.
S. R. McKewen....	Tehkummah.....	Manitoulin Island.
A. McIntyre.....	Keene .....	Tps. of Otonabee and Asphodel in Co. of Peterboro'.
Wm. McKirdy....	Nipigon .....	River and Lake Nipigon.
D. A. McNiven....	Barrie... ..	Tps. of Vespra, Innisfil, Essa and West Gwillimbury, Co. of Simcoe, including Holland River.
D. McNabb .....	Orillia.....	Tps. of Orillia and Oro, Co. of Simcoe, also over River Severn and Lakes Simcoe and Couchiching.
J. McRitchie.....	Bothwell, .....	River Thames lying between the Villages of Louisville and Wardsville, also over any waters flowing into the River Thames between the said villages.
John Nash .....	Rat Portage.....	District of Rainy River lying west of the 7th meridian line, and for that portion of the Rainy River District between the 5th and 7th meridian, north of a line drawn from Silver Lake through Sakwite Lake, Cedar Rapids and Loon Lake to One Side Lake.
Thos. Nichols.....	Hall's Bridge.....	West half of Tp. of Smith, Tp. of Ennismore, west half Tp. Harvey, Tps. of Galway and Cavindish, Co. Peterboro'.
Thos. Norquay ...	Manitowaning....	Lake Manitou, Manitoulin Island.
Thos. B. Norris..	Bolingbroke .....	Tps. Bathurst and South Sherbrooke, Co. Lanark.
Charles O'Connor.	Long Point.....	Lyndhurst waters south of Lyndhurst; also South and Gananoque Lakes.
Charles Ogg....	Hamilton .....	County of Wentworth.

SCHEDULE OF FISHERY OVERSEERS. — *Continued.*

Name.	Residence.	District.
R. Oliver.....	Little Current....	District of Algoma lying east of Algoma Mills, including Cockburn and Maitoulin Islands.
Simon Penassic....	Fort William.....	Pigeon River, in the District of Thunder Bay.
John Paul.....	Loring .....	Tps. of Harrison, Burton, McKenzie, Ferry, Wallbridge, Brown, Wilson, Mills, Pringle, Gurd, Himsworth, Nipissing, Pater-son, Hardy, McConkey, Blair and Mowat, District of Parry Sound; also the waters and islands in front of the Tps. of Harrison and Wallbridge in said district.
John Perry. ....	Fort Francis.....	Rainy Lake and adjacent waters.
John Rennie.....	Napanee.....	Tps. of Richmond, Adolphustown, North and South Fredericks- burg, with jurisdiction over Hay Bay and Bay of Quinte, in Co. Lennox and Addington.
Colin Robertson..	Hillsburg. . . . .	Tps. of Erin and West Garafraxa.
W. D. Roblin ....	Adolphustown....	Tps. of Adolphustown, South Fredericksburg, Ernestown and Amherst Island, Co. Lennox and Addington.
William Sargent..	Bronte.....	County of Halton, also Co. Wentworth north of the Canal, and Lake Ontario.
P. W. C. Shewen.	Apsley.....	Tps. of Anstruther and Chandos, Co. Peterboro.
Samuel Schell ....	Port Perry.....	Lake Scugog, lying southerly and easterly of the Scugog Bridge and southerly and westerly of the Cartwright Bridge.
J. G. Sing ....	Meaford. . . . .	Waters and Islands in Georgian Bay.
A. Skeen .....	Harwood.....	Tps. of Hamilton and Alnwick, Co. Northumberland, and over Rice Lake.
Wm. Smith .....	Gravenhurst.....	Lakes Muskoka, Roseau and Joseph, in the District of Parry Sound.
J. B. Smith .....	Charleston.....	Charleston Lake and tributaries, Co. Leeds.
P. T. Smith.....	Kemptville.....	Rideau River and tributaries, fronting on Co. of Grenville, Carle- ton and Lanark.
N. Stewart.....	Chesley.....	That portion of County Bruce lying south of Indian Reserve and Tp. of Amabel, with jurisdiction over Lake Huron in front of said Co. south of Southampton.
Wm. Stewart.....	Pelée Island .....	For Pelée Island and the other islands in Lake Erie, south of the Co. of Essex.
Jas. Stephen .....	Warton.....	Co. of Bruce fronting on Georgian Bay, lying east and south of Tobermory Harbor and Georgian Bay.
J. E. Stephens ..	Chatham.....	River Thames from Lewisville to its mouth, also the tributaries of said river between these points. Also the Tp. of Dover West, Co. Kent.
Jas. Steed.....	Sarnia.....	Co. Lambton exclusive of Walpole and St. Ann's islands.
John Steele .....	Uptergrove.....	Tps. of Thorah, Mara and Rama, Co. of Ontario.
Chas. Taylor .....	Westmeath.....	Ottawa River from Des Joachin to Fort Coulogne.
F. Terry .....	Queensville.....	North York, with jurisdiction over Holland River and that portion of Lake Simcoe lying in front of North Gwillimbury and Georgina Tps.
Alex. Trotter.....	Bobcaygeon .....	Tps. Verulam, County of Victoria and Harvey in the Co. of Peterboro.

SCHEDULE OF FISHERY OVERSEERS.—*Concluded.*

Name.	Residence.	District.
H. M. Vanluven..	Yarker .....	Tp. of Camden East, Sheffield, Kaladar, in the County of Addington.
R. M. VanNorman	Sault Ste. Marie..	District of Algoma lying west of Algoma Mills, exclusive of Cockburn and Manitoulin Islands.
Adam Waddell...	Leith .....	Co. of Grey, exclusive of Tps. of Proton, Egremont and Normanby.
R. J. Walker .....	Port Credit.....	Lake Ontario, fronting Co. Peel and for Rivers Credit and Etobicoke, tributary to said lake.
W. J. Welch .....	Carleton Place....	Tps. Torbolton, Fitzroy, Huntley, March and Goulbourn, Co. Carleton, and Tps. Beckwith, Drummond, Ramsay and Pakenham, Co. Lanark.
P. J. Wensley...	Wensley .....	Tps. of Anglesea, Eftingham, Ashby, Denbigh and Abbingen, in the County of Addington.
Jas. Whalen .....	Port Arthur .....	Rivers and streams emptying into Thunder Bay and Lake Superior, between Thunder Bay and Pigeon River.
J. H. Willmott....	Beaumaris .....	District of Muskoka.
Fred. Williams ...	Rockport .....	In and for the River St. Lawrence lying between Jackstraw Light and Mallorytown Landing.
J. M. Willis .....	Port Whitby.....	Electoral District of South Ontario, exclusive of the Tp. of Reach.
C. W. W. nacott.	Copenhagen .....	County of Elgin, exclusive of Thames River.
W. R. Wood .....	Toronto .....	Tp. of Etobicoke, York and Scarboro, and City of Toronto, Co. York.
Frank Worden....	Courtice .....	County of Durham.
James Yates .....	Goderich.....	County of Huron.
Jos. H. Yelland ..	Peterboro.....	River Otonabee and tributaries lying between Lakefield and Rice Lake, Co. Peterboro, also the waters of Rice Lake in front of South Monaghan Tp.



Statement of Revenue received from Fisheries Department during the year ended 31st December, 1903.

District.	Name.	Amount.	Total.
		\$ c.	\$ c.
Lake Nepigon .....	McKirdy, William .....	1,080 00	
Lake of the Woods and Rainy River Dist. ....	Nash, John .....	905 50	
	Perry, John .....	30 00	
Lake Superior .....	McComber, Alexander .....	1,235 00	
	Van Norman, R. M. ....	1,763 00	
Lake Huron, North Channel .....	Oliver, Richard .....	3,121 00	
Georgian Bay .....	Howard, Patrick .....	315 00	
	Johnston, J. A. ....	442 11	
	Labatt, Felix .....	55 00	
	Pratt, William .....	172 00	
	Stephens, James .....	241 50	
	Waddell, Adam .....	476 00	
	Free, John .....	24 00	
Lake Huron (proper) and River St. Clair ....	McAuley, M. A. ....	442 00	
	Stewart, Neil .....	67 00	
	Yates, James .....	625 00	
	Steed, James .....	3,486 88	
Lake St. Clair, Thames River and Detroit River.	Allan, Orlando .....	344 00	
	Cousineau, J. B. ....	881 00	
	Stephens, John E. ....	320 00	
	McRitchie, James .....	109 00	
	Crotty, John .....	4 50	
	Brown, E. H. ....	30 00	
Lake Erie and Grand River .....	Lamarsh, Peter .....	2,513 60	
	Laird, J. K. ....	4,825 00	
	Stewart, William .....	1,716 00	
	Wonnacott, C. W. ....	3,555 00	
	McCall, Geo. D. ....	1,993 01	
	Farrell, John .....	679 00	
	Couper, A. ....	783 00	
	Ellis, Joseph .....	352 00	
Lake Ontario .....	Hadgraft, Robert .....	458 50	
	Ogg, Charles .....	207 00	
	Sargent, William .....	140 00	
	Walker, R. J. ....	35 00	
	Wood, W. R. ....	81 00	
	Willis, J. M. ....	39 00	
	Freeman, Sylvanus .....	180 00	
	Clark, Marshall .....	178 00	
	Cattanach, Donald .....	225 00	
Bay of Quinte .....	McCargar, J. K. ....	315 00	
	Roblin, W. D. ....	107 50	
	Rennie, John .....	191 00	
Counties :—Frontenac, Leeds, Prescott, Russell, Carleton, Renfrew, Lanark, Grenville.	Clyde, George .....	487 00	
	Craig, William .....	86 00	
	Flynn, Robert .....	102 00	
	Donaldson, W. J. ....	21 00	
	Bilton, George .....	282 73	
	Norris, Thomas B. ....	16 00	
	Flood, A. J. ....	124 50	
	O'Conner, C. J. ....	7 00	
	Mair, David .....	20 00	
	Villeneuve, L. P. ....	2 00	
	Duchesne, Hertel .....	42 50	
	Loveday, E. T. ....	6 00	
	Barr, Henry .....	30 00	
	Taylor, Charles .....	11 00	
	Goulette, O. V. ....	185 00	
	Welsh, W. J. ....	20 00	
	Smith, P. J. ....	65 00	
Pereborough, Northumberland, and other inland counties. Victoria	Brady, Nicholas .....	57 50	
	Dickson, John .....	20 00	
	Gillespie, C. S. ....	405 00	
	Johnston, Francis .....	25 00	
	McIntyre, A. W. ....	160 00	
	Van Loven, H. M. ....	10 00	
	Carried forward .....	36,878 33	

Statement of Revenue.—*Concluded.*

District.	Name.	Amount.	Total.
	<i>Brought forward</i> .. . . .	36,878 33	\$ c.
	Wensley, P. J. . . . .	7 00	
	Yelland, J. H. . . . .	25 00	
River St. Lawrence . . . . .	Driscoll, John . . . . .	10 00	
Lake Simcoe . . . . .	McNabb, Duncan . . . . .	38 00	
	McNiven, D. A. . . . .	27 50	
Muskoka . . . . .	Smith, William . . . . .	35 00	
Nipissing . . . . .	Armstrong, John . . . . .	28 00	
	Legault, H. M. . . . .	2,242 10	
Unclassified . . . . .		70 00	
Lease of Lakes . . . . .		500 00	
			39,860 93
Refunds on account of Revenue :—			
E. H. Traves, 1900. . . . .	Muskoka (fine) . . . . .	10 00	
A. G. McKay, 1902. . . . .	County Bruce (fine) . . . . .	5 00	
O. B. Cronwell, 1902. . . . .	" Norfolk (license fee) . . . . .	2 00	
D. Jackson, 1902. . . . .	" " (license fee) . . . . .	1 00	
			18 00
			39,842 93

## ONTARIO

Return of the number of fishermen, tonnage and value of tugs, vessels and boats, the during the

Number.	Districts.	Fishing material.								
		Tugs or vessels.				Boats.			Gill-nets.	
		No.	Ton- nage.	Value.	Men.	No.	Value.	Men.	Yards.	Value.
	<i>Lake of the Woods and Rainy River District.</i>			\$		\$			\$	
1	Lake of the Woods .....	4	100	8,000	10	13	1,350	46	22,000	3,080
2	Shoal Lake .....					3	400	6	6,000	840
3	Big Sandy Lake .....					1	50	2	2,000	280
4	Wabigoon .....					2	150	4	2,000	280
5	Crow .....					1	75	2	2,000	280
6	Canyon .....					1	75	2	1,000	140
7	Denmark .....					2	200	3	2,000	280
8	Stormy .....					1	75	2	2,000	280
9	Rainy .....					4	300	8	4,700	500
10	District lying between the 5th and 7th meridian lines and south of a line running due east from One Side Lake to Whitefish Lake...					2	150	4	2,000	300
	Totals .....	4	100	8,000	10	30	2,825	79	45,700	6,260

Return of the number of fishermen, tonnage and value of tugs

Number.	District.	Herrings, salted.		Herring, fresh.	Whitefish.	Trout.	Pass.	Pickeral or Dove.	Pike.
		bls.	lbs.		lbs.	lbs.	lbs.	lbs.	lbs.
	<i>Lake of the Woods and Rainy River District.</i>								
1	Lake of the Woods .....				148,140	20,780		87,100	44,900
2	Shoal Lake .....				101,400			22,200	14,050
3	Big Sandy Lake .....				2,000	10,000			
4	Wabigoon .....				4,000			20,000	10,000
5	Crow .....				8,000	2,000			
6	Canyon .....				1,000	2,600			
7	Denmark .....				10,400	3,700		5,400	4,050
8	Stormy .....				4,000	6,000			1,000
9	Rainy .....				59,000	50,000			5,000
10	District lying between the 5th and 7th meridian lines and south of a line running due east from One Side Lake to Whitefish Lake.....				2,000				200
	Totals .....				330,940	95,080		134,700	79,200
	Values .....				38,094	9,508		13,470	3,168

FISHERIES.

quantity and value of all fishing materials, also the kinds and quantities of fish caught year 1903.

Fishing material.									Other fixtures used in fishing.					Number.
Seines.			Pound nets.		Hoop nets.		Night lines.		Freezers and ice houses,		Piers and wharves.			
No.	Yards.	Value.	No.	Value.	No.	Value.	No. hooks.	Value.	No.	Value.	No.	Value.		
		\$		\$		\$		\$		\$		\$		
.....	.....	.....	12	2,500	21	1,575	.....	.....	3	2,000	1	500	1	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10	
.....	.....	.....	12	2,500	21	1,575	.....	.....	3	2,000	1	500	.....	

vessels and bouts, fishing material, etc. —Continued.

Maskinonge.	Sturgeon.	Eels.	Perch.	Tullibee.	Catfish.	Mixed and coarse fish.	Caviare.	Sturgeon bladders.	Trout, salted.	Whitefish, salted.	Value.	Number.
lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	No.	bls.	brlv.	\$	
.....	31,000	.....	.....	5,200	165,500	.....	1,180	.....	.....	.....	44,138	1
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12,922	2
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,200	3
.....	.....	.....	.....	8,000	.....	.....	.....	.....	.....	.....	3,286	4
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,000	5
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	360	6
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,112	7
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,040	8
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10,200	9
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	50	.....	.....	.....	.....	.....	.....	.....	.....	.....	212	10
.....	31,050	.....	.....	13,200	165,500	.....	1,180	.....	.....	.....	76,464	.....
.....	2,484	.....	.....	792	13,240	.....	708	.....	.....	.....	76,464	.....



## ONTARIO

Return of the number of fishermen, tonnage and value of tugs,

Number.	Districts.	Fishing material.							
		Tugs or vessels.				Boats.			Gill-nets.
		No.	Ton- nage.	Value.	Men.	No.	Value.	Men.	Yards. Value.
	<i>Lake Superior.</i>			\$			\$		\$
1	Thunder Bay .....	10	76	6,800	36	37	2,505	52	200,700 11,560
2	Gros Cap .....					3	250	6	6,600 500
3	Slate Island .....					1	100	2	1,000 100
4	Carribou Island .....					1	160	2	
5	Michipicoten Island .....					6	1,000	11	5,000 150
6	Point Mamainse .....	1	10	2,000	6				20,000 1,500
7	Batchewana Bay .....	1	10	2,000	6	4	325		9,100 725
8	Goulais .....					6	475	12	6,600 580
9	Otter Head .....					1	100	2	1,000 100
10	Lizzard Islands .....	3	30	19,000	36	7	1,060	43	91,000 8,675
11	Gargantua Harbor .....					1	50	2	650 100
12	Parisian Island .....					1	50	2	6,000 500
	Totals .....	15	120	29,800	84	68	6,015	134	347,050 24,490

Return of the number of fishermen, tonnage and value of tugs.

Number.	Districts.	Herring, salted.	Herring, fresh.	Whitefish.	Trout.	Bass.	Pickarel or Dore.	Pike.
		brls.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
	<i>Lake Superior.</i>							
1	Thunder Bay .....		29,500	294,200	892,800		40,850	3,050
2	Gros Cap .....			13,500	19,200			
3	Slate Islands .....				3,700			
4	Carribou Island .....				13,700			
5	Michipicoten Island .....			14,000	20,200			
6	Point Mamainse .....			9,260	76,000			
7	Batchewana Bay .....			49,700	24,100			
8	Goulais Bay .....			18,000	22,000		250	100
9	Otter Head .....				8,400			
10	Lizzard Islands .....			149,790	559,400		3,700	300
11	Gargantua Harbor .....			1,000	500			
12	Parisian Island .....			14,500	1,600		2,600	200
	Totals .....		29,500	563,950	1,641,600		47,400	3,650
	Values .....		\$1,180	56,395	164,160		4,740	146

FISHERIES.

vessels and boats, fishing material, etc.—*Continued.*

Fishing material.								Other fixtures used in fishing.					
Seines.			Pound nets.		Hoop nets.		Night lines.		Freezers and ice houses.		Piers and wharves.		
No.	Yards.	Value.	No.	Value.	No.	Value.	No. hooks.	Value.	No.	Value.	No.	Value.	
		\$		\$		\$		\$		\$		\$	
			12	2,000					7	1,550			
			6	1,800					1	1,000			
									1	1,800			
			5	1,500					1	500			
			5	1,500					8	9,500			
			28	6,800					18	14,350			

vessels and boats, fishing materials, etc., for 1903.—*Continued.*

Maskinonge.	Sturgeon.	Eels.	Perch.	Tulibee.	Catfish.	Mixed and coarse fish.	Caviare.	Sturgeon Bladders.	Trout, salted.	Whitefish, salted.	Value.	Number.
lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	No.	brls.	brls.	\$	
.....	2,850	.....	.....	.....	.....	4,200	.....	.....	193	.....	126,329	1
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,270	2
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	370	3
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,370	4
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,420	5
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8,526	6
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7,380	7
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,029	8
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	840	9
.....	900	.....	.....	.....	.....	.....	.....	.....	400	.....	75,373	10
.....	250	.....	.....	.....	.....	.....	.....	.....	.....	.....	150	11
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,898	12
.....	4,000	.....	.....	.....	.....	4,200	.....	.....	593	.....	232,955	.....
.....	320	.....	.....	.....	.....	84	.....	.....	5,930	.....	232,955	.....

## ONTARIO

Return of the number of fisherman, tonnage and value of tugs

Number.	Districts.	Fishing Material.							
		Tugs or vessels.				Boats.			Gill-nets.
		No.	Ton- nage.	Value.	Men.	No.	Value.	Men.	Yards. Value.
	<i>Lake Huron (North Channel).</i>			\$			\$		\$
1	Tenby Bay.....					1	50	1	1,100 50
2	Marksville.....					1	400	2	3,000 300
3	Thessalon.....	1	8	1,500	3	7	580	10	600 75
4	Blind River.....					3	200	6	4 600
5	Spragg.....	1	5	1,500	5	1	100		
6	Kagawong.....	1	12	2,000	4				25,000 1,200
7	Little Current.....	1	12	1,100	6	2	300		
8	Gore Bay.....	1	20	1,500	6	1	100	2	
9	Meldrum Bay.....	1	25	4,000	6	1	150	2	24,000 3,000
10	Cockburn Island.....	1	23	5,500	6	4	500	8	41,000 3,400
11	Ducks Islands.....	3	75	10,500	18	4	400	8	98,000 13,200
12	South Bay Mouth.....	2	40	4,000	12	4	400	8	72,000 2,000
13	Fitzwilliam Island.....					14	1,500	27	71,000 4,200
14	Squaw.....	4	90	12,700	22	3	275	6	96,000 11,000
15	Killarney.....	3	80	8,000	18	45	6,050	134	294,900 19,740
16	Bustard Islands.....	2	36	8,000	12	26	2,340	53	187,100 11,905
	Totals.....	21	426	60,300	118	117	13,345	267	918,300 70,170

Return of the number of fishermen, tonnage and value of tugs

Number.	District.	Herring, salted.		Herring, fresh.	Whitefish.	Trout.	Bass.	Pickered or Dore.	Pike.
		lbs.	lbs.		lbs.	lbs.	lbs.	lbs.	lbs.
	<i>Lake Huron, (Northumberland).</i>								
1	Tenby Bay.....				70			90	9,150
2	Marksville.....	20			800	2,000		200	2,000
3	Thessalon.....				49,150	23,100		30,050	4,700
4	Blind River.....	76							
5	Spragg.....		1,000		2,000	8,000		106,800	500
6	Kagawong.....				20,490	59,150			
7	Little Current.....				127,300	30,050		25,150	9,500
8	Gore Bay.....				12,780	8,580		30,590	450
9	Meldrum Bay.....				10,000	110,000		28,000	
10	Cockburn Island.....				35,000	152,000		4,600	1,700
11	Ducks Islands.....		14,000		19,000	404,000			
12	South Bay Mouth.....				24,300	186,600		6,000	
13	Fitzwilliam Island.....	200			48,580	112,920			
14	Squaw Island.....	40			111,960	177,680		6,000	
15	Killarney.....	359			197,050	243,580		279,670	2,550
16	Bustard Islands.....	945			153,500	196,000		131,000	39,000
	Totals.....	1,640	15,000		811,980	1,713,660		648,150	69,550
	Values.....	\$13,120	600		\$1,193	171,366		64,815	2,782

FISHERIES.

vessels and boats, fishing material, etc.—Continued.

Fishing Material.									Other fixtures used in fishing.					Number.
Seines.			Pound nets.		Hoop nets.		Night lines.		Freezers and ice houses.		Piers, and wharves.			
No.	Yards.	Value.	No.	Value.	No.	Value.	No. hooks.	Value.	No.	Value.	No.	Value.		
		\$		\$		\$		\$		\$		\$		
.....	.....	.....	11	2,300	.....	.....	.....	.....	1	100	.....	.....	1	
.....	.....	.....	8	1,600	.....	.....	.....	.....	1	100	.....	.....	2	
.....	.....	.....	15	2,400	.....	.....	.....	.....	2	200	.....	.....	3	
.....	.....	.....	5	1,500	.....	.....	.....	.....	2	600	.....	.....	4	
.....	.....	.....	4	1,000	.....	.....	.....	.....	1	250	.....	.....	5	
.....	.....	.....	2	200	.....	.....	.....	.....	.....	.....	.....	.....	6	
.....	.....	.....	5	600	.....	.....	.....	.....	1	300	.....	.....	7	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	11	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	14	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	16	
.....	.....	.....	50	9,600	.....	.....	.....	.....	8	1,550	.....	.....	.....	

vessels and boats, fishing material, etc.—Continued.

Maskinonge.	Sturgeon.	Eels.	Perch.	Tulibee.	Catfish.	Mixed and coarse fish.	Caviare.	Sturgeon bladders.	Trout, salted.	Whitefish, salted.	Value.	Number.
lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	No.	bls.	bls.	\$	
.....	.....	.....	.....	.....	.....	5,200	.....	.....	.....	.....	480	1
.....	.....	.....	.....	.....	.....	7,250	400	.....	.....	.....	510	2
.....	6,300	.....	.....	.....	.....	.....	.....	.....	.....	.....	11,907	3
.....	.....	.....	.....	.....	.....	500	.....	.....	.....	.....	678	4
.....	4,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	12,100	5
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7,004	6
.....	5,500	.....	.....	.....	.....	.....	215	.....	.....	.....	10,100	7
.....	1,800	.....	.....	.....	.....	.....	.....	.....	.....	.....	5,057	8
.....	2,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	14,000	9
.....	2,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	20,440	10
.....	2,650	.....	.....	.....	.....	.....	.....	.....	200	100	44,860	11
.....	.....	.....	.....	.....	.....	.....	.....	.....	80	.....	22,580	12
.....	.....	.....	.....	.....	.....	.....	.....	.....	1,375	.....	31,500	13
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	29,884	14
.....	.....	.....	.....	.....	2,000	.....	.....	.....	25	.....	75,414	15
.....	5,200	.....	.....	.....	2,000	.....	200	.....	.....	.....	57,896	16
.....	27,450	.....	.....	.....	.....	4,500	12,450	815	1,689	103	355,095	
.....	2,196	.....	.....	.....	.....	360	249	489	16,890	1,030	355,005	



## ONTARIO

Return of the number of fishermen, tonnage and value of tugs,

Georgian Bay

Number.	Districts.	Fishing material.							
		Tugs or vessels.				Boats.			Gill-nets.
		No.	Ton-nage.	Value.	Men.	No.	Value.	Men.	Yards. Value.
	<i>Georgian Bay Division.</i>			\$			\$		\$
1	Parry Sound .....	8	190	16,400	55	19	3,050	34	240,250 15,300
2	Waubashene .....					7	1,000	14	20,000 2,000
3	Victoria Harbour .....					10	1,870	23	11,650 3,310
4	Midland .....					14	1,000	20	28,000 2,250
5	Penetanguishene .....					11	900	20	12,000 900
6	Collingwood .....	3	81	6,000	19	3	2,850	6	101,700 7,000
7	Owen Sound .....	6	112	17,400	31	38	2,595	67	227,500 11,480
8	Colpoys's Bay and Tobermory .....	2	56	7,000	49	19	1,101	5	1,047,100 7,287
	Totals .....	19	439	46,800	154	121	14,366	189	1,688,200 49,527

Georgian Bay.—

Number.	Districts.	Herring, salted.	Herring, fresh.	Whitefish.	Trout.	Bass.	Pickeral or Dore.	Pike.
		brls.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
	<i>Georgian Bay Division.</i>							
1	Parry Sound .....		4,125	263,160	215,920		4,250	8,050
2	Waubashene .....	32	4,100	4,000	5,070		36,770	18,650
3	Victoria Harbour .....	1	2,200	31,600	10,000		49,200	11,500
4	Midland .....	91		40,000	45,000		10,000	9,000
5	Penetanguishene .....	30	2,500	5,000	7,000		1,000	3,000
6	Collingwood .....	54	57,800	9,100	127,650			
7	Owen Sound .....	3	6,150	111,100	512,930			
8	Colpoys's Bay and Tobermory .....	1	2,100	3,120	289,620			
	Totals .....	212	78,975	467,080	1,213,190		101,220	50,200
	Values .....	1,696	3,159	46,708	121,319		10,122	2,008

Lake Huron

Number.	Districts.	Fishing material.							
		Tugs or vessels.				Boats.			Gill-nets.
		No.	Ton-nage.	Value.	Men.	No.	Value.	Men.	Yards. Value.
	<i>Lake Huron (Proper).</i>			\$			\$		\$
1	Cape Hurd to Southampton .....	5	189	21,000	5	22	2,395	48	254,700 21,634
2	Southampton to Goderich .....	1	12	3,000	5	5	165	11	47,351 1,930
3	County of Huron, including Grand Bend division .....	2	46	4,500	12	17	1,665	38	64,500 6,850
4	Bosquet Township .....					5	900	12	4,500 500
5	Plympton .....					9	505	14	
6	Sarnia .....	1	29	1,500		22	1,525	32	880 20
	Totals .....	9	226	30,000	22	80	7,155	155	371,931 20,934

## FISHERIES.

vessels and boats, fishing material, etc., for 1903.—*Continued.*

Division.

Fishing material.									Other fixtures used in fishing.				Number.
Seines.			Pound nets.		Hoop nets.		Night lines.		Freezers and ice houses.		Piers and wharves.		
No.	Yards.	Value.	No.	Value.	No.	Value.	No. hooks.	Value.	No.	Value.	No.	Value.	
		\$		\$		\$		\$		\$		\$	
.....	.....	.....	.....	.....	.....	.....	.....	.....	5	1,100	3	900	
.....	.....	.....	.....	.....	.....	.....	.....	.....	3	2,500	.....	.....	
.....	.....	.....	.....	.....	.....	.....	.....	.....	2	500	1	150	
.....	.....	.....	.....	.....	.....	.....	.....	.....	2	500	.....	.....	
.....	.....	.....	.....	.....	.....	.....	.....	.....	1	150	1	150	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
.....	.....	.....	.....	.....	.....	.....	.....	.....	3	200	.....	.....	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
.....	.....	.....	.....	.....	.....	.....	.....	.....	16	4,950	5	1,200	

*Continued.*

	Sturgeon.											Value.	Number.
lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	No.	brls.	brls.		\$	
					200				5			48,896	1
	1,550				850	17,850	125		7	5		6,484	2
	8,750				2,000	24,700	210					10,716	3
						2,600				38		13,090	4
									207	10		2,460	5
	17,900		10,000			1,000	4,600		60	12		22,221	6
						200			102			63,697	7
									22			29,586	8
	23,200		10,000		3,050	45,850	4,935		520	65		197,140	
	1,856		300		244	917	2,961		5,200	650		197,140	

(Proper).

Fishing material.								Other fixtures used in fishing.				Number.	
Seines.			Pound nets.		Hoop nets.		Night lines.		Freezers and ice houses.		Piers and wharves.		
No.	Yards.	Value.	No.	Value.	No.	Value.	No. hooks.	Value.	No.	Value.	No.		Value.
		\$		\$		\$		\$		\$			\$
.....	.....	.....	2	300	.....	.....	.....	.....	11	3,100	.....		.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	1	500	.....	.....	
.....	.....	.....	20	3,250	.....	.....	.....	.....	7	435	.....	.....	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
.....	.....	.....	4	1,000	.....	.....	.....	.....	.....	.....	.....	.....	
.....	.....	.....	15	2,900	.....	.....	.....	.....	1	500	.....	.....	
.....	.....	.....	82	7,000	.....	.....	.....	.....	2	200	.....	.....	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
.....	.....	.....	73	14,500	.....	.....	.....	.....	22	4,735	.....	.....	

## ONTARIO

Return of the number of fishermen, tonnage and value of tugs,

Lake Huron

Number.	District.	Herring, salted.	Herring, fresh.	Whitefish.	Trout.	Bass.	Pickeral or Dore.	Pike.
		brls.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
1	<i>Lake Huron (Proper).</i>							
2	Cape Hurd to Southampton.	1,234	20,000	4,000	646,600			
3	Southampton to Goderich....	142	3,600		182,100			400
4	County of Huron, including							
5	Grand Bend division.....		48,750	13,380	197,780		50,100	3,000
6	Bosanquet Township.....		4,150	1,500	20,660		29,980	
7	Plympton.....		17,350		170		57,540	
8	Sarnia.....	5	28,875	750	1,500		103,300	
	Totals.....	1,381	122,725	19,630	1,048,810		240,920	3,400
	Values.....	\$11,048	4,909	1,963	104,881		24,092	136

Return of the number of fishermen, tonnage and value of tugs,

Number.	Districts.	Fishing material.								
		Tugs or vessels.			Boats.			Gill-nets.		
		No.	Ton- nage.	Value.	Men.	No.	Value.	Men.	No.	Yards. Value.
	<i>Lake St. Clair.</i>			\$			\$			\$
1	River St. Clair.....				13	390	33			
2	Thames River.....				18	319	64	*30	88	
3	Lake St. Clair & Detroit River	3	13	1,700	5	85	2,495	161	*2	3
	Totals.....	3	13	1,700	5	116	3,204	258	*32	91

\*Dip nets.

Return of the number of fishermen, tonnage and value of tugs

Number.	District.	Herring, salted.	Herring, fresh.	Whitefish.	Trout.	Bass.	Pickeral or Dore.	Pike.
		brls.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
	<i>Lake St. Clair.</i>							
1	River St. Clair.....		3,200				138,350	2,100
2	Thames River.....						33,470	2,025
3	Lake St. Clair & Detroit River		650	17,750			56,050	19,650
	Totals.....		3,850	17,750			227,870	23,775
	Values.....		\$154	\$1,775			\$22,787	\$951

## FISHERIES.

vessels and boats, fishing material, etc., for 1903.—*Continued.*Proper.—*Continued.*

Maskinonge.	Sturgeon.	Eels.	Perch.	Tullibee.	Catfish.	Mixed and coarse fish.	Caviare.	Sturgeon bladders.	Trout salted.	Whitefish salted.	Value.	Number.
lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	No.	brls.	brls.	\$	
.....	3,000	.....	.....	.....	.....	10,000	900	.....	345	4	80,202	1
.....	.....	.....	400	.....	.....	.....	.....	.....	370	.....	23,218	2
.....	3,300	.....	6,000	.....	.....	22,850	15	.....	.....	.....	29,106	3
.....	1,800	.....	2,600	.....	1,000	1,400	.....	.....	3	.....	5,740	4
.....	3,000	.....	100	.....	50	14,800	.....	.....	.....	.....	7,008	5
.....	15,425	.....	500	.....	200	19,350	.....	.....	.....	.....	13,402	6
.....	26,525	.....	9,600	.....	1,250	68,400	915	.....	718	4	158,676	
.....	\$2,122	.....	288	.....	100	1,363	549	.....	7,180	40	158,676	

vessels and boats, fishing material, etc., for 1903.—*Continued.*

Fishing material.									Other fixtures used in fishing.					Number.
Seines.			Pound nets.		Hoop nets.		Night lines.		Freezers and ice houses.		Piers and wharves.			
No.	Yards	Value.	No.	Value.	No.	Value.	No	Value.	No.	Value.	No.	Value.		
		\$		\$		\$	hooks	\$		\$		\$		
12	1,140	783							2	400				
18	860	550												
27	3,180	2,400	8	2,025	95	5,700	6,600	176	28	3,140	3	475		
57	5,180	3,733	8	2,025	95	5,700	6,600	176	30	3,540	3	475		

vessels and boats, fishing material, etc., for 1903.—*Continued.*

Maskinonge.	Sturgeon.	Eels.	Perch.	Tullibee.	Catfish.	Mixed and coarse fish.	Caviare.	Sturgeon bladders.	Trout, salted.	Whitefish, salted.	Value.	Number.
lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	No.	brls.	brls.	\$	
.....	1,800	.....	2,700	.....	.....	89,900	.....	.....	.....	.....	16,030	1
.....	.....	.....	.....	.....	1,225	77,400	.....	.....	.....	.....	5,074	2
.....	41,600	100	41,300	.....	32,450	409,700	2,270	.....	.....	.....	24,917	3
.....	42,900	100	44,000	.....	33,675	577,000	2,270	.....	.....	.....	\$46,021	
.....	\$ 3,432	6	1,320	.....	2,694	11,510	1,362	.....	.....	.....	46,021	



## ONTARIO

Return of the number of fishermen, tonnage and value of tugs,

Number.	Districts.	Fishing material.								
		Tugs or vessels.				Boats.			Gill nets.	
		No.	Ton- nage.	Value.	Men.	No.	Value.	Men.	No.	Yards. Men.
	<i>Lake Erie.</i>			\$			\$			\$
1	Pelee Island.....	4	90	12,900	40	13	960	25	.....	22,600 3,300
2	County Essex.....	2	50	9,400	7	49	5,000	64	.....	4,700 410
3	do Kent.....	1	50	12,000	10	67	8,090	101	.....	.....
4	do Elgin.....	7	50	15,550	13	52	6,690	111	.....	60,040 5,420
5	Houghton and Long Point.....	4	41	13,000	14	25	845	41	.....	81,600 5,995
6	Port Rowan Bay.....					8	250	28	.....	.....
7	Normandale.....					30	2,453	70	.....	15,260 734
8	East of Port Dover.....	3	18	4,475	14	13	1,022	22	.....	31,200 1,483
9	Cayuga to and including Grand River.....	4	66	15,500	25	10	255	15	.....	4,600 8,000
10	Port Maitland to Port Colbourne.....	3	44	5,900	13	17	595	30	.....	16,700 895
11	Port Colbourne to Niagara Falls.....					27	1,185	31	.....	16,400 1,475
	Totals.....	28	409	88,725	136	314	27,347	538	.....	253,100 27,712

Return of the number of fishermen, tonnage and value of tugs

Number.	District.	Herring, salted.	Herring, fresh.	Whitefish.	Trout.	White Bass.	Pickarel or Dore.	Pike.
		brls.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
	<i>Lake Erie.</i>							
1	Pelee Island.....		154,150	24,050	.....	.....	8,900	27,175
2	County Essex.....		93,500	41,700	.....	.....	98,730	256,150
3	do Kent.....		411,250	22,800	.....	1,400	320,770	481,200
4	do Elgin.....		416,650	39,050	.....	.....	345,150	13,550
5	Houghton and Long Point.....		153,000	27,550	60	600	54,510	2,950
6	Port Rowan Bay.....		450	.....	.....	2,150	14,250	2,850
7	Normandale.....		14,750	250	.....	1,750	28,250	5,550
8	East of Port Dover.....		236,825	42,800	1,140	150	126,900	700
9	Cayuga to and including Grand River.....		171,000	77,800	100	.....	42,950	.....
10	Port Maitland to Port Colbourne.....		71,200	27,550	1,570	.....	65,850	26,050
11	Port Colbourne to Niagara Falls.....		2,650	230	.....	.....	14,120	48,450
	Totals.....		1,725,425	303,280	2 870	6,050	1,118,380	864,625
	Values.....		\$69,017	30,328	287	484	111,838	34,585

FISHERIES.

vessels and boats, fishing material, etc., for 1903.—Continued.

Fishing material.								Other fixtures used in fishing.					Number.
Seines.			Pound nets.		Hoop nets.		Night lines.		Freezers and ice houses.		Piers and wharves.		
No.	Yards	Value.	No.	Value.	No.	Value.	No. hooks.	Value.	No.	Value.	No.	Value.	
		\$		\$		\$		\$		\$		\$	
1	132	40	20	6,800	2	180	1,000	10	5	1,900			1
3	150	100	62	23,400	4	175			20	4,690			2
4	1,200	250	93	30,800					48	16,240			3
			79	21,800					33	8,700			4
6	2,300	625	9	2,950			1,200	12	9	5,015			5
7	2,800	870											6
10	3,880	1,375											7
			17	4,250					3	65			8
									9	1,930			9
5	355	210	5	1,300					6	300			10
			16	2,800					10	1,600			11
			4	120			6,500	39					
36	10,817	3,470	305	93,720	6	355	8,700	61	143	40,440			

vessels and boats, fishing material, etc., for 1903.—Continued.

Mackinoge.	Sturgeon.	Eels.	Perch.	Tullibee.	Catfish.	Mixed and coarse fish.	Caviare.	Sturgeon bladders.	Trout, salted.	Whitefish, salted.	Value.	Number.
lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	No.	brls.	brls.	\$ c.	
	4,600		13,900		9,175	37,400	320				13,007	1
	13,600		87,100		7,900	152,600	1,020				35,826	2
	10,000		82,600		1,100	62,350	470	50			75,102	3
	11,650		34,000		7,050	52,450	450				59,463	4
	650		29,900		10,450	117,400	225				18,766	5
			15,000	2,500	5,100	62,750					3,992	6
			53,900	50	750	144,950					8,381	7
	17,200		25,000		100	20,850	500	100			29,528	8
	18,450		35,100		50	50,300	300	20			22,610	9
	27,900		38,200		200	61,500	1,370				18,833	10
	30,800		3,500		250	21,500	2,060	390			8,046	11
	134,850		418,200	2,550	42,125	784,050	6,715	560			293,554	
	10,788		12,546	153	3,370	15,681	4,029	448			293,554	

## ONTARIO

Return of the number of fishermen, tonnage and value of tugs,

Number.	Districts.	Fishing material.							
		Tugs or vessels.			Boats.			Gill-nets.	
		No.	Tonnage.	Value.	Men.	No.	Value.	Men.	Yards. Value.
				\$			\$		\$
<i>Lake Ontario.</i>									
1	Queenston.....	1	5	1,000	4	13	1,080	25	45,680 1,830
2	Niagara.....	2	14	15,000	8	18	3,020	40	63,900 2,915
3	Port Dalhousie.....					16	690	19	6,150 250
4	Louth.....					5	600	7	7,700 305
5	Clinton.....					3	1,200	6	1,600 60
6	Grimsby.....					11	950	20	40,300 1,800
7	Burlington Beach.....					19	3,080	41	75,000 4,140
8	County of Halton.....					3	600	5	10,000 840
9	do Peel.....					14	1,605	16	36,000 2,240
10	do York.....	1	3	700	2				
11	County of Ontario, exclusive of Township of Reach.....	1	3	600	2	5	210	10	9,350 335
12	Counties of Durham & Northumberland.....					19	1,052	30	24,365 1,457
13	Rice Lake and Trent River.....					31	339	50	
14	Prince Edward County.....	1	20	250	3	30	1,150	63	17,600 828
15	Bay of Quinte.....					19	485	32	2,600 60
16	Lennox Co. and Napanee River.....					17	315	24	60 10
17	Amherst Island and vicinity.....					31	773	40	18,400 454
18	Wolfe Island and vicinity.....					17	575	29	4,000 175
Totals.....		6	45	17,550	19	271	17,724	457	362,705 18,289

Return of the number of fishermen, tonnage and value of tugs,

Number.	District.	Herring, salted.	Herring, fresh.	Whitefish.	Trout.	Bass.	Pickrel or Dore.	Pike.
		bbls.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Lake Ontario.								
1	Queenston		100				2,800	
2	Niagara		132,000	5,030			26,810	
3	Port Dalhousie		216,900	60	20		7,350	200
4	Louth		22,200				650	550
5	Clinton		39,100					
6	Grimsby		85,600	2,000	13,200			
7	Burlington Beach		142,600	19,500	2,600		200	7,500
8	County of Halton		148,500		4,000			
9	do Peel		6,000	3,000	5,500			300
10	do York		112,000	6,750	3,300		100	200
11	County of Ontario, exclusive of Township of Reach		16,800	2,200	540			400
12	Counties of Durham & Northumberland		96,100	4,800	9,800		200	30,000
13	Rice Lake and Trent River							1,500
14	Prince Edward County		55,200	6,440	24,700		12,200	114,800
15	Bay of Quinte		10,000	20,000			8,000	140,000
16	Lennox Co. and Napanee River							10,500
17	Amherst Island and vicinity	5	4,900	22,750	4,100		1,200	25,950
18	Wolfe Island and vicinity			4,450	3,500		2,000	13,600
Totals		5	1,087,400	96,980	71,260		61,510	345,500
Values		\$40	43,495	9,698	7,126		6,151	13,320

## FISHERIES.

vessels and boats, fishing materials, etc., for 1903.

Fishing material.								Other fixtures used in fishing.				Number	
Seines.			Pound nets.		Hoop nets.		Night lines.		Freezers and ice-houses.		Piers and wharves.		
No.	Yards	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.		Value.
		\$		\$		\$		\$		\$		\$	
			†3	275					1	50			
			*117	117					9	1,625			
4	400	125					100	50	14	1,005			
									1	600			
					8	160							
					96	1,807			13	305			
2	650	310			16	280			3	455			
					49	400							
					37	690							
					7	135							
					34	575							
6	1,050	435			247	3,987	100	50	2	75			
									43	4,115			
† Machines.						* Spears.							

† Machines.

\* Spears.

vessels and boats, fishing material, etc., for 1903.—Continued.

Maskinonge.	Sturgeon.	Eels.	Perch.	Tullibee.	Catfish.	Mixed and coarse fish.	Caviare.	Sturgeon bladders.	Trout, salted.	Whitefish, salted.	Value.	Number.
lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	No.	brls.	brls.	\$	
	1,500		5,000			2,000					594	1
			4,200								8,590	2
			5,600		100	6,200					9,727	3
			2,000		1,000	350					1,122	4
			6,200								1,750	5
											4,920	6
			8,700		3,000	11,600					8,967	7
						20,000					6,740	8
		700	500		400	2,350					1,258	9
			1,700		2,000	9,200					5,898	10
			300								971	11
			5,900		10,500	31,700					8,175	12
		1,150	9,900		54,600	23,250					5,259	13
	4,300		137,300		65,100	168,050					24,166	14
	1,000	30,000	90,000		55,000	95,000					19,680	15
			29,300		58,400	11,359					6,218	16
	2,700		28,000		7,550	4,650			2		5,832	17
	2,000	6,000	25,500	6,500	28,500	13,400					5,762	18
	11,500	37,850	360,100	6,500	286,150	399,100			2		125,609	
	920	2,271	10,803	390	22,892	7,982			20		125,609	



## ONTARIO

Return of the number of fishermen, tonnage and value of tugs.

Number.	Districts.	Fishing material.								
		Tugs or vessels.				Boats.			Gill nets.	
		No.	Ton- nage.	Value.	Men.	No.	Value.	Men.	No.	Yards. Men.
1	Frontenac County .....					109	1,270	170		5,194 844
2	Leeds and Lanark .....					89	387	65		510 54
3	Prescott, Russell and Carleton Counties.....	1	10	300	1	29	883	35		1,050 120
4	Renfrew County .....					53	326	58		1,580 195
5	Nipissing District.....	3	10	3,100	11	21	1,000	35		14,500 900
6	Muskoka do .....					2	31	3		600 .....
	Totals.....	4	20	3,400	12	253	3,897	366		23,434 2,113

Return of the number of fishermen, tonnage and value of tugs,

Number.	District.	Herring, salted.		Herring, fresh.	Whitefish.	Trout.	Bass.	Pickarel or Dore.	Pike.
		brls.	lbs.						
1	Frontenac County .....	30½	5,825	10	300			170	61,350
2	Leeds and Lanark .....		2,750						8,800
3	Prescott, Russell and Carleton Counties.....			50				4,070	7,775
4	Renfrew County .....			200	150			800	6,150
5	Nipissing District.....		15,950	20,600				18,010	15,350
6	Muskoka do .....		750	320	390			1,340	
	Totals.....	30½	25,275	21 180	840			24,390	99,425
	Values.....	\$244	1,011	2,118	84			2,439	3,977

FISHERIES.—Continued.

vessels and boats, fishing material, etc., for 1903.—Continued.

Fishing material.								Other fixtures used in fishing.					
Seines			Pound nets.		Hoop nets.		Night lines.		Freezers and ice houses.		Piers and wharves.		
No.	Yards	Value.	No.	Value.	No.	Value.	No. hooks.	Value.	No.	Value.	No.	Value.	
		\$		\$		\$		\$		\$		\$	
1	12	20			68	1,477			1	2,500			
					68	1,325			6	214	1	25	
					18	330	1,800	69	15	235			
			12	3,100					2	2,400			
1	12	20	12	3,100	154	3,132	1,800	69	24	5,349	1	25	

vessels and boats, fishing material, etc., for 1903. —Continued.

Maskinonge.	Sturgeon.	Fels.	Perch.	Tullibee.	Catfish.	Mixed and coarse fish.	Caviare.	Sturgeon bladders.	Trout, salted.	Whitefish, salted.	Value.	Number.
lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	No.	brls.	brls.	\$	
			18,400		84,750	37,350					11,058	1
			7,200		60,950	7,200					5,698	2
											2,727	3
	1,500		1,000		17,825	21,400					553	4
	25		200		1,975	1,300					29,237	5
	191,250					22,600	13,720	150	2		357	6
						6,100						
	192,775		26,800		165,500	95,950	13,720	150	2		49,680	
	15,422		804		13,240	1,919	8,232	120	20		49,630	

ONTARIO

Recapitulation of the number of fishermen, tonnage and value of tugs,

Number.	Districts.	Fishing material.									
		Tugs or vessels.				Boats.			Gill nets		
		No.	Ton- nage.	Value.	Men.	No.	Value.	Men.	No.	Yards.	Value.
				\$			\$			\$	
1	Lake of the Woods and Rainy River District...	4	100	8,000	10	30	2,825	79	.....	45 700	6,260
2	Lake Superior.....	15	120	29,800	84	68	6,015	134	.....	347,050	24,490
3	Lake Huron (N. channel).	21	426	60,300	118	117	13,345	267	.....	913,800	70,170
4	Georgian Bay.....	19	439	46,800	154	121	14,366	189	.....	1,688 200	49,527
5	Lake Huron (proper).....	9	226	30,000	22	80	7,155	155	.....	371,931	30,934
6	Lake and River St. Clair and Thames River.....	3	13	1,700	5	116	3,204	258	\$32	.....	\$91
7	Lake Erie and Grand River.....	28	409	88,725	136	314	27,347	538	.....	253,100	27,712
8	Lake Ontario.....	6	45	17,550	19	271	17,724	457	.....	362,705	18,289
9	Frontenac County.....					109	1,270	170	.....	5,194	844
10	Leeds and Lanark County					39	887	65	.....	510	54
11	Prescott, Russell and Carleton Counties.....	1	10	300	1	29	883	35	.....	1,050	120
12	Renfrew County.....					53	326	58	.....	1,580	195
13	Nipissing District.....	3	10	3,100	11	21	1,000	35	.....	14,500	900
14	Muskoka District.....					2	31	3	.....	600	.....
	Totals.....	109	1,798	286,275	560	1,370	95,878	2,443	.....	4,005,420	229,495

§ Dip nets.

Recapitulation of the number of fishermen, tonnage and value of tugs,

Number.	District	Herring, salted.	Herring, fresh.	Whitefish.	Trout.	White bass.	Pickrel or Dore.	Pike.	Maskinonge.
		brls.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
1	Lake of the Woods and Rainy River District...			330,940	95,080	.....	134,700	79,200	...
2	Lake Superior.....		29,500	563,950	1,641,600	.....	47,400	3,650	.....
3	Lake Huron (N. channel).	1,640	15,000	811,980	1,713,660	.....	648,150	69,550	.....
4	Georgian Bay.....	212	78,975	467,080	1,213,190	.....	101,220	50,200	.....
5	Lake Huron (proper).....	1,381	122,725	19,630	1,048,810	.....	240,920	3,400	.....
6	Lake and River St. Clair and Thames River.....		3,850	17,750	.....	.....	227,870	23,775	.....
7	Lake Erie and Grand River.....		1,725,425	303,280	2,870	6,050	1,118,380	864,625	.....
8	Lake Ontario.....	5	1,087,400	96,980	71,260	.....	61,510	345,500	.....
9	Frontenac County.....	30½	5,825	10	300	.....	170	61,350	.....
10	Leeds and Lanark County		2,750	.....	.....	.....	.....	8,800	.....
11	Prescott, Russell and Carleton Counties.....			50	.....	.....	4,070	7,775	.....
12	Renfrew County.....			200	150	.....	800	3,150	.....
13	Nipissing District.....		15,950	20,600	.....	.....	18,010	15,350	.....
14	Muskoka District.....		750	320	390	.....	1,340	.....	.....
	Totals.....	3,268½	3,088,150	2,632,770	5,787,310	6,050	2,604,540	1,539,325	.....
	Values.....	\$26,148	123,526	263,277	578,731	484	260,454	61,573	.....

FISHERIES.—Continued.

vessels and boats, fishing material, etc., for 1903.

Fishing material.									Other fixtures used in fishing.					Numbe.
Seines.			Pound nets.		Hoop nets.		Night lines.		Freezers and ice houses.		Piers and wharves.			
No	Yards.	Value.	No.	Value	No.	Value.	No. hooks.	Value.	No.	Value.	No.	Value.		
		\$		\$		\$		\$		\$		\$		
.....			12	2,500	21	1,575	.....	.....	3	2,000	1	500	1	
.....			28	6,800			.....	.....	18	14,350	.....	.....	2	
.....			50	9,600			.....	.....	8	1,550	.....	.....	3	
.....							.....	.....	16	4,950	5	1,200	4	
.....			73	14,500	..		.....	.....	22	4,735	.....	.....	5	
57	5,180	3,733	8	2,025	95	5,700	6,600	176	30	3,540	3	475	6	
36	10,817	3,470	305	93,720	6	355	8,700	61	143	40,440	.....	.....	7	
6	1,050	435	*117	*117	247	3,987	100	50	43	4,115	†3	†275	8	
.....					68	1,477	.....	.....	1	2,500	.....	.....	9	
1	12	20	.....		68	1,325	.....	.....	6	214	1	25	10	
.....					18	330	1,800	69	15	235	.....	.....	11	
.....			12	3,100	.....		.....	.....	2	2,400	.....	.....	12	
.....					.....		.....	.....	.....		.....	.....	13	
.....					.....		.....	.....	.....		.....	.....	14	
100	17,059	7,658	488	132,245	523	14,749	17,200	356	307	81,029	10	2,200		

\* Spears.                      † Machines.

vessels and boats, fishing material, etc., for 1903.—Continued.

Sturgeon.	Eels.	Perch.	Tullibee.	Catfish.	Mixed and coarse fish.	Caviare.	Sturgeon bladders.	Trout, salted.	Whitefish, salted.	Value.	Number.
lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	No.	brls.	brls.	\$	
31,050			13,200	165,500		1,180				76,464	1
4,000					4,200					232,955	2
27,450				4,500	12,450	815		593		355,095	3
23,200		10,000		3,050	45,850	4,935		520	103	197,140	4
26,525		9,600		1,250	68,400	915		718	65	158,676	5
42,900	100	44,000		33,675	577,000	2,270				46,021	6
288,850		418,200	2,550	42,125	784,050	6,715	560			305,874	7
11,500	37,850	360,100	6,500	286,150	399,100			2		125,609	8
.....		18,400		84,750	37,350					11,058	9
.....		7,200		60,950	7,200					5,698	10
1,500		1,000		17,825	21,400					2,727	11
25		200		1,975	1,300					553	12
191,250					22,600	13,720	150	2		29,237	13
.....					6,100					357	14
648,250	37,950	868,700	22,250	701,750	1,987,000	30,550	710	3,524	172	1,547,464	
\$51,860	2,277	26,061	1,335	55,140	39,740	18,330	568	35,240	1,720	1,547,464	



## Comparative Statement of Yield 1902, 1903, According to Districts.

	1902.	1903	Increase.	Decrease.
<b>Lake of the Woods and Rainy River district:</b>				
Whitefish .....	lbs. 263,970	330,940	66,965	.....
Trout .....	" 61,504	95,080	33,576	.....
Pickereel .....	" 207,174	134,700	.....	72,474
Pike .....	" 51,341	79,200	27,859	.....
Maskinonge .....	" .....	.....	.....	.....
Sturgeon .....	" 44,099	31,050	.....	13,049
Perch .....	" .....	.....	.....	.....
Tullibee .....	" 4,323	13,200	8,877	.....
Catfish .....	" 240,739	165,500	.....	75,239
Coarse fish .....	" .....	.....	.....	.....
Caviare .....	" 1,853	1,180	.....	673
Bladders .....	" 128	.....	.....	128
<b>Lake Superior:</b>				
Herring .....	lbs. 105,220	29,500	.....	75,720
Whitefish .....	" 398,943	563,950	165,007	.....
Trout .....	" 1,333,816	1,641,600	307,784	.....
Pickereel .....	" 35,205	47,400	12,195	.....
Pike .....	" 3,060	3,650	590	.....
Sturgeon .....	" 5,860	4,000	.....	1,860
Perch .....	" .....	.....	.....	.....
Coarse fish .....	" 980	4,200	3,220	.....
Caviare .....	" .....	.....	.....	.....
Trout .....	bbls. 226½	593	366½	.....
Whitefish .....	" 151	.....	.....	151
<b>Lake Huron, N.C.:</b>				
Herring .....	bbls. 529	1,640	1,111	.....
" .....	lbs. 25,200	15,000	.....	10,200
Whitefish .....	" 1,149,150	811,980	.....	337,170
Trout .....	" 1,217,205	1,713,660	496,455	.....
Pickereel .....	" 569,776	648,150	78,374	.....
Pike .....	" 71,650	69,550	.....	2,100
Sturgeon .....	" 18,180	27,450	9,270	.....
Perch .....	" 295	.....	.....	295
Catfish .....	" 2,745	4,500	1,755	.....
Coarse fish .....	" 26,430	12,450	.....	13,980
Caviare .....	" 12,119	815	.....	11,304
Trout .....	bbls. 20	1,689	1,669	.....
Whitefish .....	" 50	103	53	.....
<b>Georgian Bay:</b>				
Herring .....	bbls. 1,837	212	.....	1,625
" .....	lbs. 121,200	78,975	.....	42,225
Whitefish .....	" 456,290	467,080	10,790	.....
Trout .....	" 1,400,470	1,213,190	.....	187,280
Pickereel .....	" 95,850	101,220	5,370	.....
Pike .....	" 18,570	50,200	31,630	.....
Sturgeon .....	" 28,240	23,200	.....	5,040
Perch .....	" 9,000	10,000	1,000	.....
Catfish .....	" 2,190	3,050	860	.....
Coarse fish .....	" 27,600	45,850	18,250	.....
Whitefish .....	bbls. 30	65	35	.....
Trout .....	" 253	520	267	.....
Caviare .....	" 5,600	4,935	.....	665
<b>Lake Huron (proper):</b>				
Herring .....	bbls. 940	1,331	441	.....
" .....	lbs. 250,155	122,725	.....	127,430
Whitefish .....	" 16,818	19,630	2,812	.....
Trout .....	" 1,002,007	1,048,810	46,803	.....
Pickereel .....	" 318,570	240,920	.....	77,650
Pike .....	" .....	3,400	3,400	.....
Sturgeon .....	" 51,250	26,525	.....	24,725
Perch .....	" 6,358	9,600	3,242	.....
Catfish .....	" 870	1,250	380	.....
Coarse fish .....	" 119,184	68,400	.....	50,784
Caviare .....	" 836	915	.....	79
Whitefish .....	bbls. 1	4	3	.....
Trout .....	" 640	718	78	.....

Comparative Statement of Yield 1902, 1903, According to Districts.—*Con.*

		1902.	1903.	Increase.	Decrease.
<b>River St. Clair:</b>					
Whitefish	lbs.	1,000			1,000
Herring	bbls.		3,200	3,200	
"	lbs.	4,800			4,800
Eels	"				
Pickrel	"	104,350	188,350	34,000	
Pike	"		2,100	2,100	
Sturgeon	"	1,090	1,300	210	
Perch	"	5,000	2,700		2,300
Catfish	"				
Coarse fish	"	53,420	89,900	36,480	
Caviare	"				
<b>Lake St. Clair and Detroit River:</b>					
Herring	lbs.	850	650		200
Whitefish	"	38,000	17,750		20,250
Pickrel	"	52,850	56,050	3,200	
Pike	"	21,250	19,650		1,600
Sturgeon	"	40,650	41,600	950	
Perch	"	44,250	41,300		2,950
Tullibee	"				
Catfish	"	42,750	32,450		10,300
Coarse fish	"	385,800	409,700	23,900	
Caviare	"	1,382	2,270	888	
Eels	"		100	100	
<b>Thames River:</b>					
Pickrel	lbs.	29,656	33,470	3,814	
Pike	"	886	2,025	1,139	
Sturgeon	"				
Perch	"				
Tullibee	"				
Catfish	"	541	1,225	684	
Coarse fish	"	83,962	77,400		6,562
<b>Lake Erie:</b>					
Herring	bbls.				791,750
"	lbs.	2,517,175	1,725,425		146,606
Whitefish	"	449,886	303,280		
Trout	"	863	2,870	2,007	
Bass (white)	"	3,300	6,050	2,750	
Pickrel	"	1,455,239	1,118,380		336,859
Pike	"	1,073,522	864,625		208,897
Sturgeon	"	145,373	134,850		10,523
Perch	"	566,890	418,200		148,190
Tullibee	"	500	2,550	2,050	
Catfish	"	34,390	42,125	7,735	
Coarse fish	"	674,214	784,050	109,836	
Caviare	"	9,524	6,715		2,809
Sturgeon bladders	"	78	560	482	
<b>Lake Ontario:</b>					
Herring	bbls.	1,000	5		995
"	lbs.	2,032,919	1,087,400		945,519
Whitefish	"	77,071	96,980	19,909	
Trout	"	64,675	71,260	6,585	
Pickrel	"	48,165	61,510	13,345	
Pike	"	366,674	345,500		21,174
Sturgeon	"	13,808	11,500		2,308
Eels	"	65,288	37,850		27,438
Perch	"	546,871	360,100		186,771
Catfish	"	269,282	286,150	16,868	
Coarse fish	"	500,013	399,100		100,913
Caviare	"	448			448
Bladders	"	100			100
Tullibee	"	45,200	6,500		38,700
Trout	"	10	2		8
<b>Nipissing District:</b>					
Herring	bbls.		15,950	14,630	
"	lbs.	1,320	20,600	20,100	
Whitefish	"	500			
Trout	"		18,010	16,285	
Pickrel	"	1,725	15,350	13,410	
Pike	"	1,940			

Comparative Statement of Yield, 1902-1903, according to Districts.—*Con.*

	1902	1903	Increase.	Decrease.
<b>Nipissing District.—<i>Con.</i></b>				
Catfish.....lbs.	200			200
Sturgeon....."	128,600	191,250	62,650	
Perch....."				
Coarse fish....."	2,645	22,600	19,955	
Caviare....."	13,212	13,720	508	
Bladders....."	62½	150	87½	
Trout....."		2	2	
<b>Inland waters:</b>				
Herring.....bbls.	15½	13½	2	
".....lbs.	22,515	9,325		13,190
Whitefish....."	9,037	580		8,457
Trout....."	37,028	840		36,188
Pickeral....."	12,395	6,380		6,015
Pike....."	111,937	84,075		27,862
Sturgeon....."	15,334	1,525		13,809
Eels....."	7,950			7,950
Perch....."	117,700	26,800		90,900
Catfish....."	240,640	165,500		75,140
Coarse fish....."	193,566	67,250		126,316
Caviare....."				

Comparative Statement of the Yield of the Fisheries of the Province.

Kinds of Fish.	1902	1903	Increase	Decrease
Whitefish.....lbs.	2,860,670	2,632,770		227,900
" (salted)....."	48,500	34,400		14,100
Herring....."	5,081,354	3,088,150		1,993,204
" (salted)....."	864,400	653,700		210,700
Trout....."	5,117,568	5,787,310	669,742	
" (salted)....."	227,900	704,800	476,900	
Bass*....."	3,300	6,050	2,750	
Pickeral....."	2,930,855	2,604,540		325,815
Pike....."	1,720,830	1,539,325		181,505
Sturgeon....."	492,484	494,250	1,766	
Caviare....."	33,436	30,550		2,886
Eels....."	73,238	37,950		35,288
Perch....."	1,289,864	868,700		421,164
Catfish....."	843,721	701,750		141,971
Coarse fish....."	2,067,814	1,987,000		80,814
Tullibee....."	58,768	22,250		36,518
Bladders....."	368	710	342	
Total.....	23,714,570	21,194,205	1,151,500	3,671,865
Total Decrease 1903.....				2,520,365

NOTE.—Black Bass and Maskinonge being taken with hook and line only, no accurate return of the number taken is obtainable.

## RECAPITULATION

Of fishing tugs, boats, nets, etc., employed in the Province for the year 1903.

Articles.	Value.
109 tugs, 1,798 tonage, 560 men .....	\$286,275
1,370 boats, 2,443 men .....	95,878
4,005,420 yards of gill nets .....	225,495
100 seines, 17,059 yards .....	7,658
488 pound nets .....	132,245
523 hoop-nets .....	14,749
32 dip-nets .....	91
17,200 hooks and set lines .....	356
307 freezers and ice houses .....	81,029
10 piers and wharves .....	2,200
3 machines .....	275
117 spears .....	117
<b>Total</b> .....	<b>\$846,368</b>

Statement of the yield and the value of the Fisheries of the Province for the year 1903.

Kind of Fish.	Quantity.	Price.	Value.
		\$ c.	\$
Whitefish .....	bbls. 172	10 00	1,720
" .....	lbs. 2,632,770	10	263,277
" .....	bbls. 3 524	10 00	35,240
Trout .....	bbls. 5 787,310	10	578,731
" .....	lbs. 3,268½	03	26,148
Herring .....	bbls. 3,088,150	04	123,526
" .....	lbs. 6,050	08	484
Bass (white) .....	" 2,604 540	10	260,444
Pickarel .....	" 1 539,325	04	61,573
Pike .....	" 494,250	08	39,540
Sturgeon .....	" 30,550	60	18,330
Caviare .....	" 710	80	568
Bladders .....	" 37,950	06	2 277
Bels .....	" 863,700	03	26,061
Perch .....	" 701,750	03	56,140
Catfish .....	" 1,987 000	02	39,740
Coarse fish .....	" 22,250	06	1,335
Tullibee .....			
<b>Total</b> .....			<b>\$1,535,144</b>



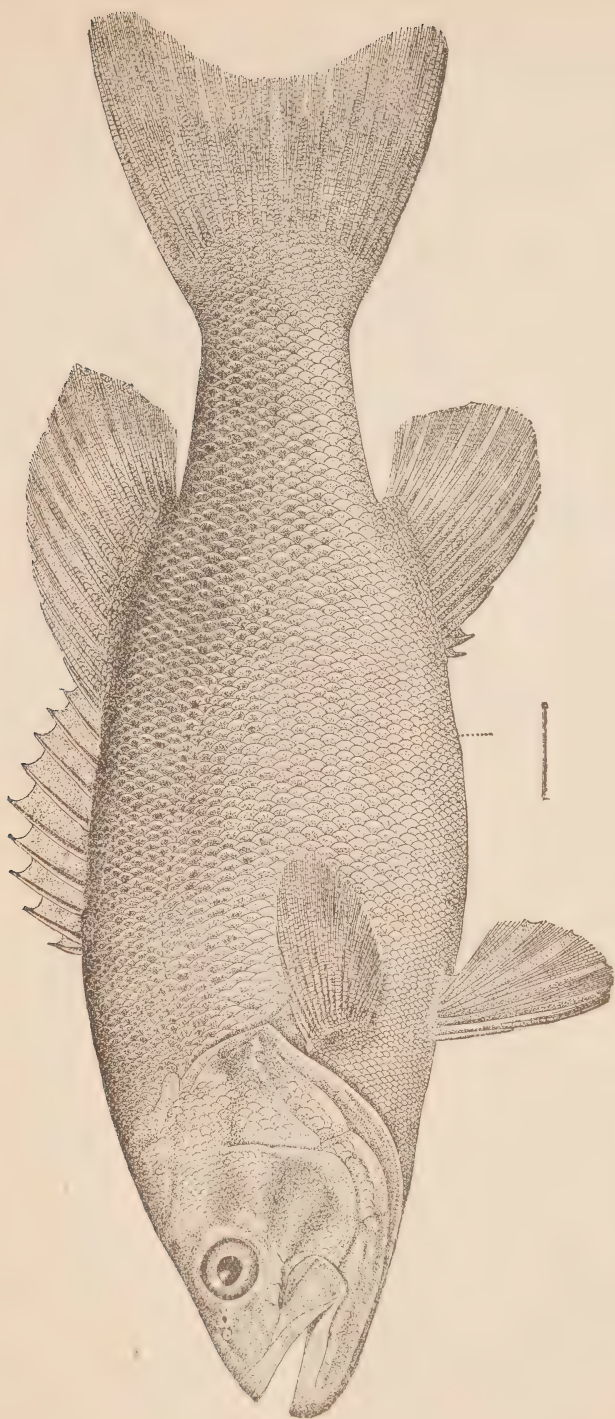
## Value of Ontario Fisheries from 1870 to 1903, inclusive.

Years.	Value.	Years.	Value.
1870.....	\$264,982	1887.....	Brought forward.....
1871.....	193,524	1888.....	\$10,228,696
1872.....	267,633	1889.....	1,531,850
1873.....	293,091	1890.....	1,839,869
1874.....	446,267	1891.....	1,963,123
1875.....	453,194	1892.....	2,009,637
1876.....	437,229	1893.....	1,806,389
1877.....	438,223	1894.....	2,042,198
1878.....	348,122	1895.....	1,694,930
1879.....	367,133	1896.....	1,659,968
1880.....	444,491	1897.....	1,584,473
1881.....	509,903	1898.....	1,605,674
1882.....	825,457	1899.....	1,289,822
1883.....	1,027,033	1900.....	1,433,631
1884.....	1,133,724	1901.....	1,477,815
1885.....	1,342,692	1902.....	1,428,078
1886.....	1,435,998	1903.....	1,265,705
Carried forward.....	\$10,228,696	Total.....	1,535,144
			\$37,730,295

Statement showing the number of fry distributed in the waters of the Province by the Federal Government from Dominion hatcheries.

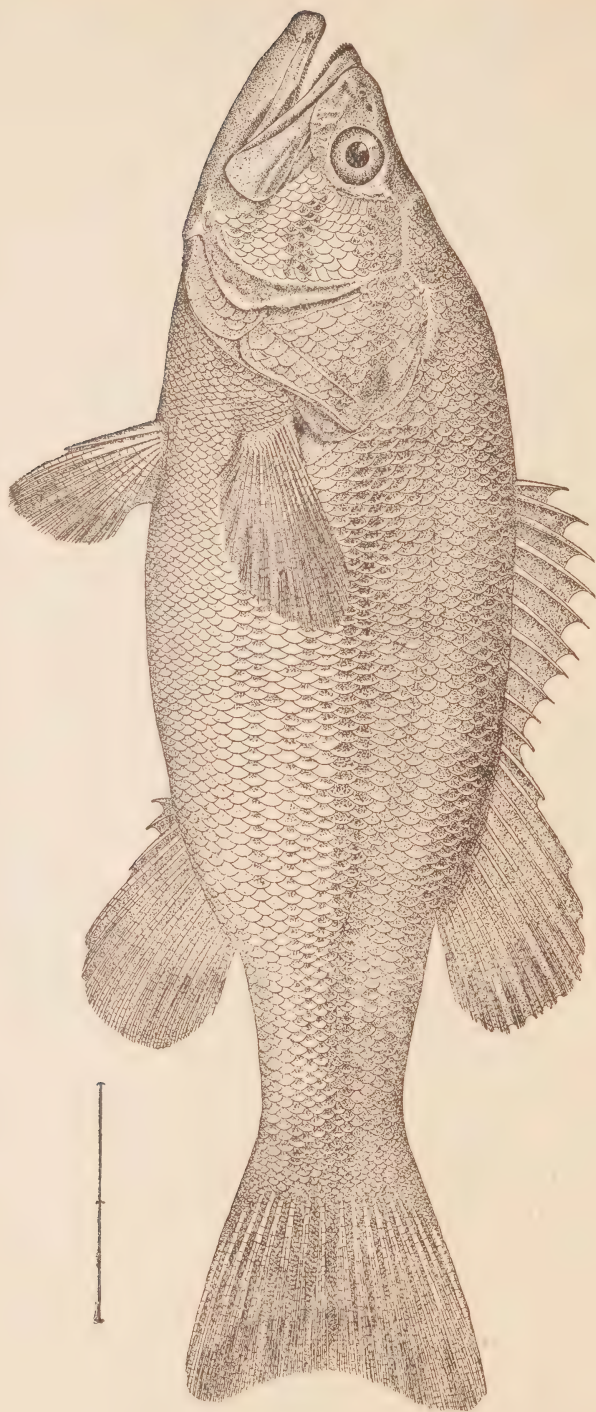
Years.	Newcastle Hatchery.	Sandwich Hatchery.	Ottawa Hatchery.	Total.
1868-73.....	1,070,000			1,070,000
1874.....	350,000			350,000
1875.....	650,000			650,000
1876.....	700,000	8,000,000		8,700,000
1877.....	1,300,000	8,000,000		9,300,000
1878.....	2,605,000	20,000,000		22,605,000
1879.....	2,602,700	12,000,000		14,602,700
1880.....	1,923,000	13,500,000		15,423,000
1881.....	3,300,000	16,000,000		19,300,000
1882.....	4,841,000	44,000,000		48,841,000
1883.....	6,053,000	72,000,000		78,053,000
1884.....	8,800,000	37,000,000		45,800,000
1885.....	5,700,000	68,000,000		73,700,000
1886.....	6,451,000	57,000,000		63,451,000
1887.....	5,130,000	56,500,000		61,630,000
1888.....	8,076,000	56,000,000		64,076,000
1889.....	5,846,000	21,000,000		26,846,500
1890.....	7,736,000	52,000,000	5,732,000	65,468,000
1891.....	7,807,500	75,000,000	7,043,000	89,850,500
1892.....	4,823,500	44,000,000	4,909,000	54,232,500
1893.....	9,835,000	68,000,000	6,208,000	84,043,000
1894.....	6,000,000	47,000,000	4,480,000	57,480,000
1895.....	6,000,000	73,000,000	3,210,000	82,210,000
1896.....	5,200,000	61,000,000	3,950,000	70,150,000
1897.....	4,200,000	72,000,000	4,100,000	80,200,000
1898.....	4,325,000	71,000,000	3,020,000	78,345,000
1899.....	4,050,000	73,000,000	3,700,000	80,750,000
1900.....	5,175,000	90,000,000	3,450,000	98,625,000
1901.....	5,900,000	67,000,000	3,014,000	75,914,000
1902.....	650,000	100,000,000	1,245,500	101,895,000
1903.....	2,500,000	90,000,000	1,201,000	93,701,000
Totals.....	139,600,206	1,472,500,000	55,262,500	1,574,862,206

The above figures are taken from the report of the Department of Marine and Fisheries.

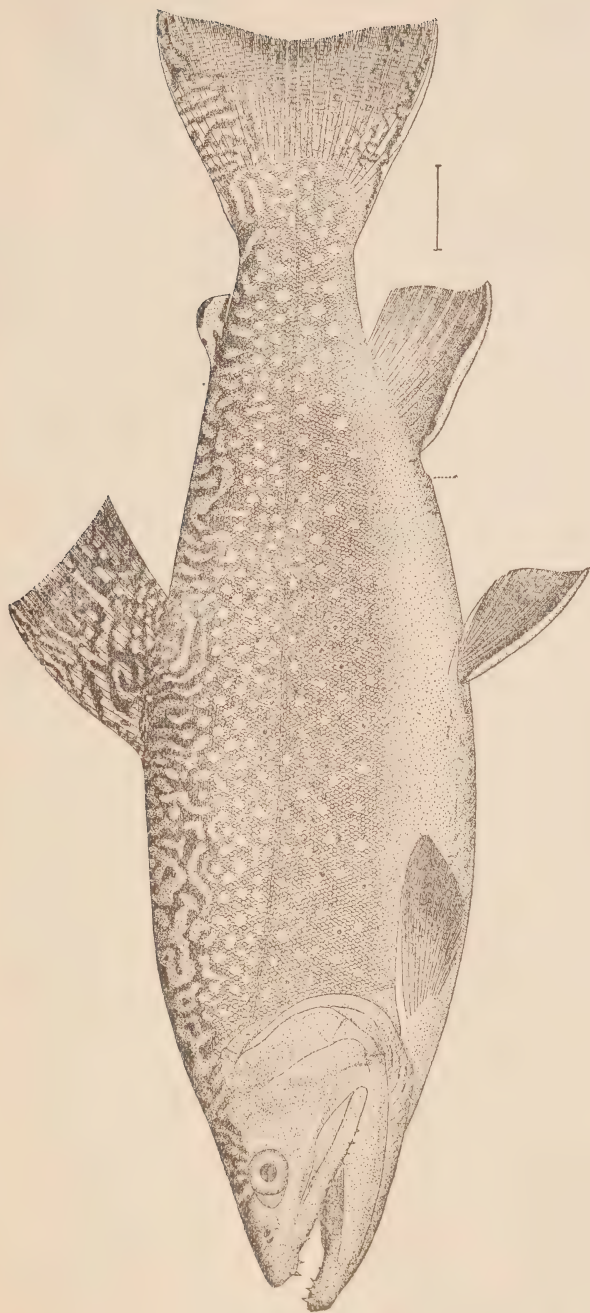


Small-mouthed Black Bass, (*Micropterus dolomieu*.)

Large-mouthed Black Bass. (*Micropterus salmoides*.)

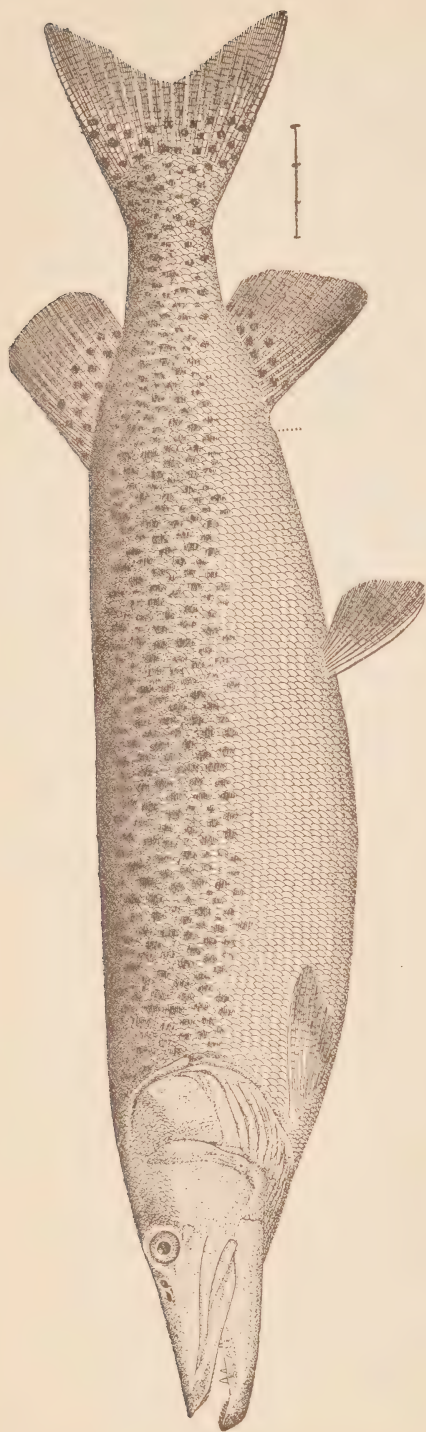




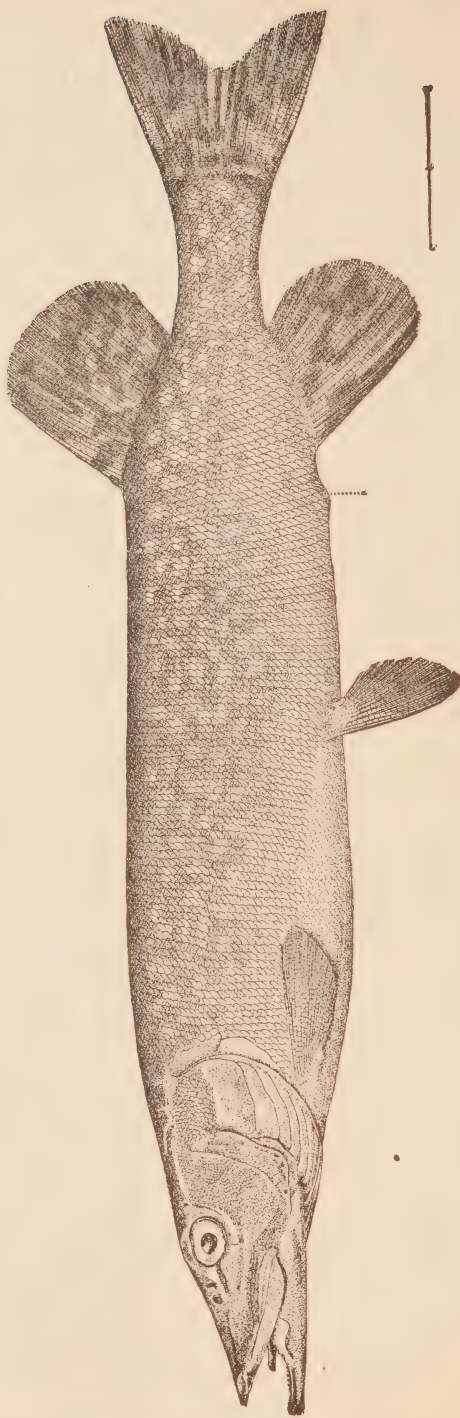


Brook Trout. (*Salvelinus fontinalis*.)

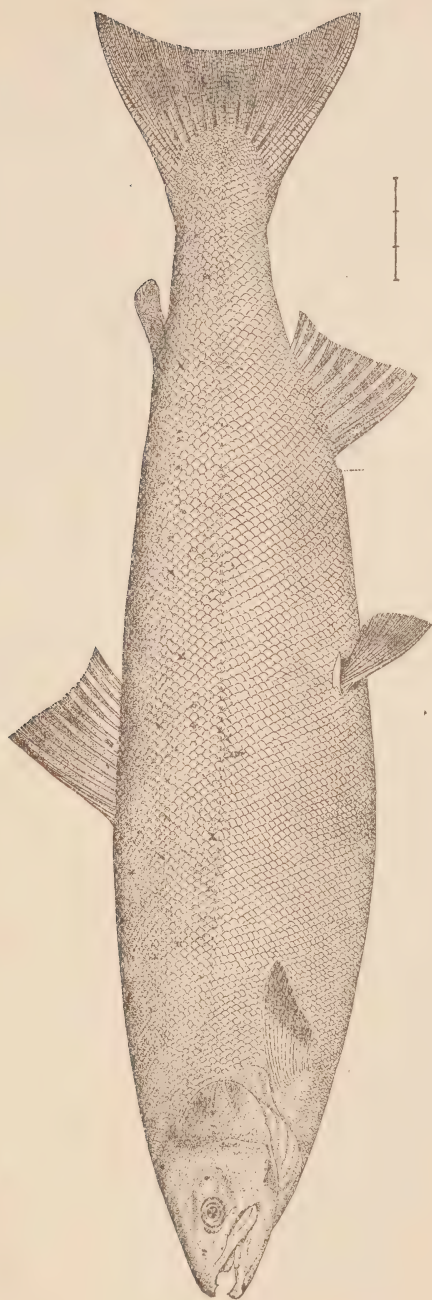




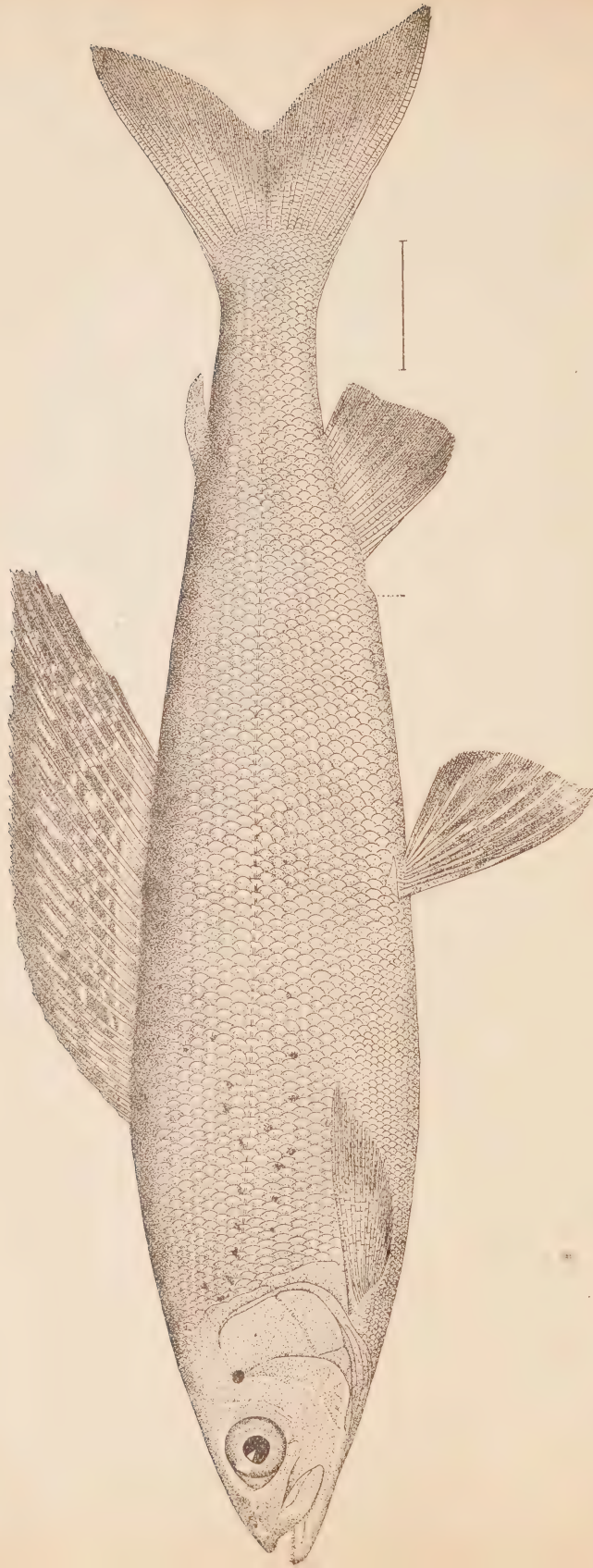
Maskinonge. (*Esox nobilior.*)



Pike, (*Esox lucius.*)

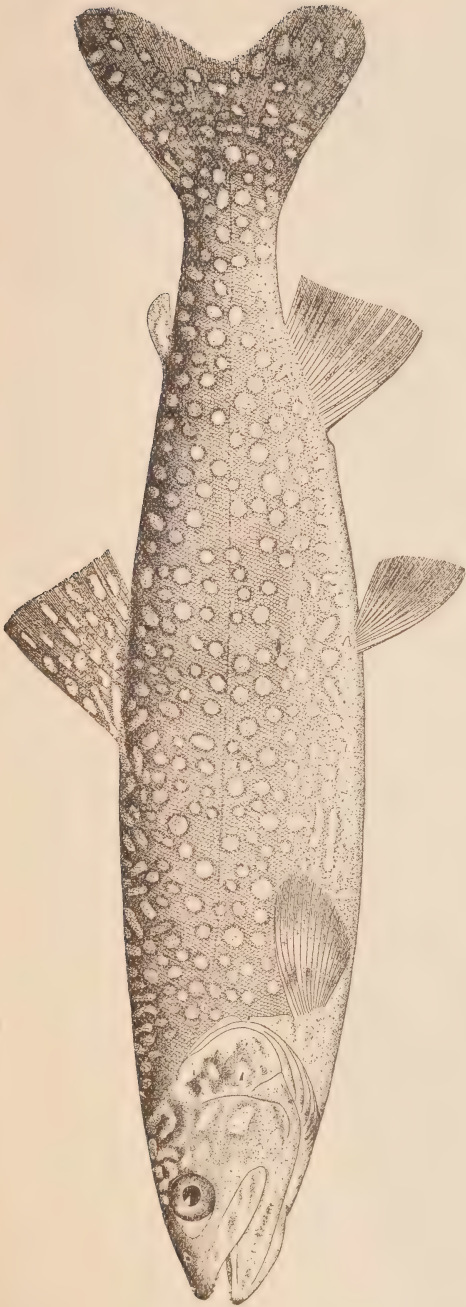


Atlantic Salmon. (*Salmo salar*)

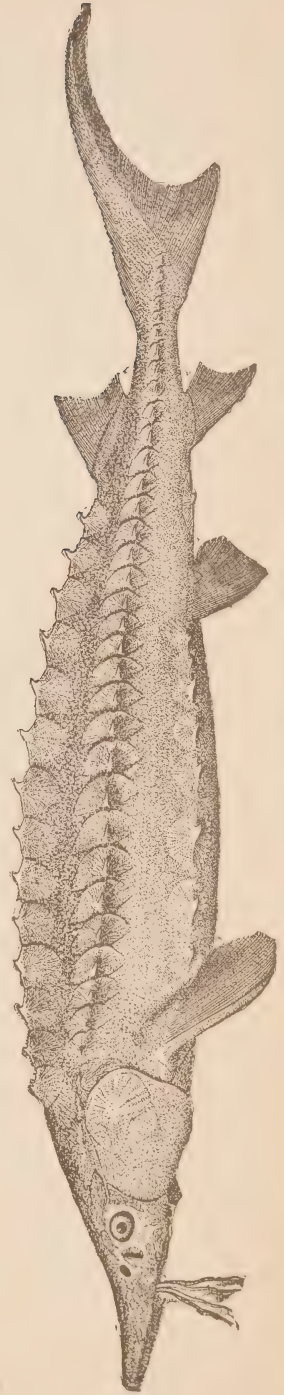


The Grayling. (*Thymallus tricolor*.)



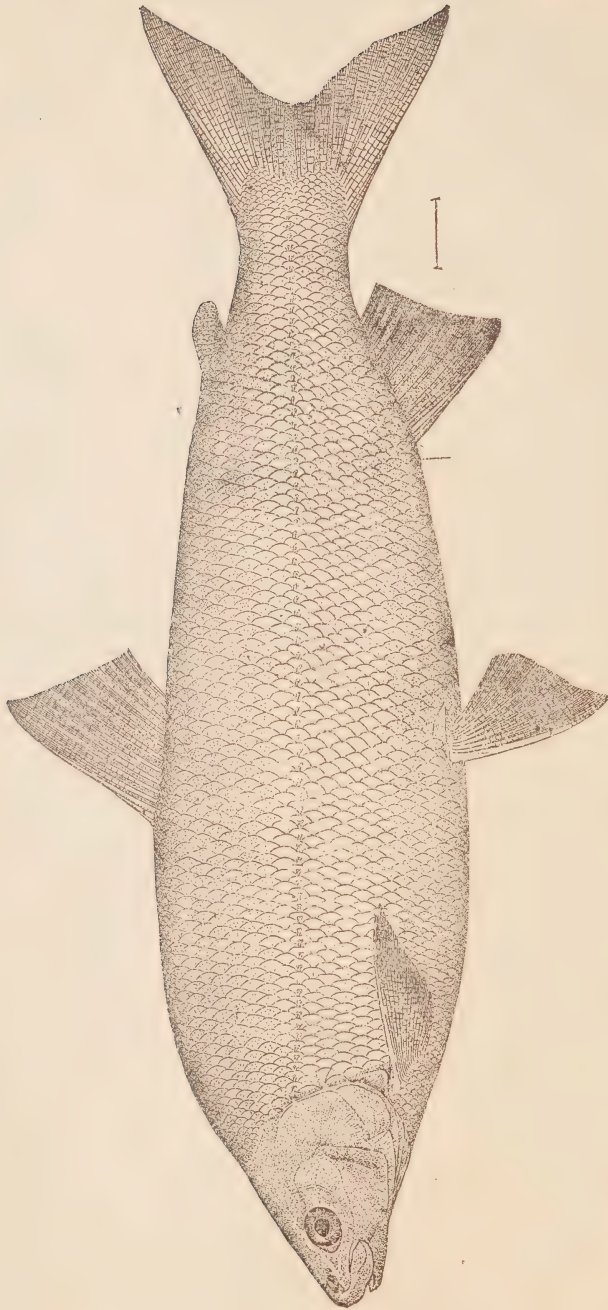


Lake Trout. (*Salvelinus namaycush*.)

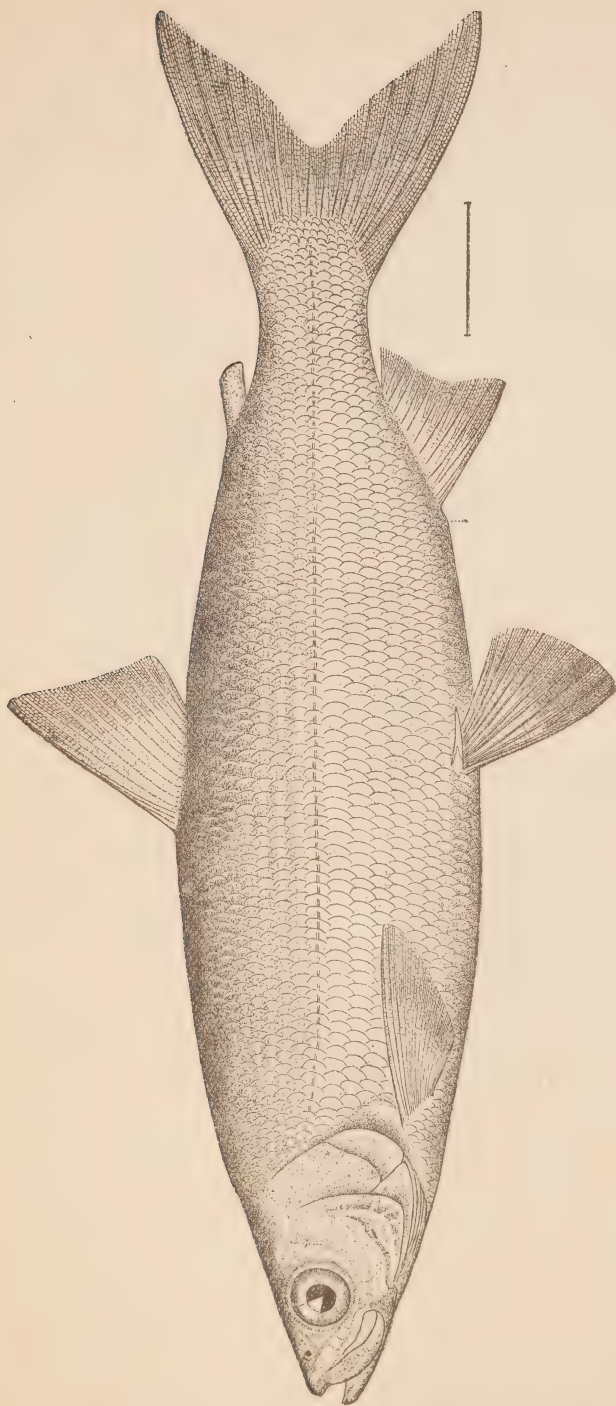


Sturgeon. (*Acipenser rubicundus*.)

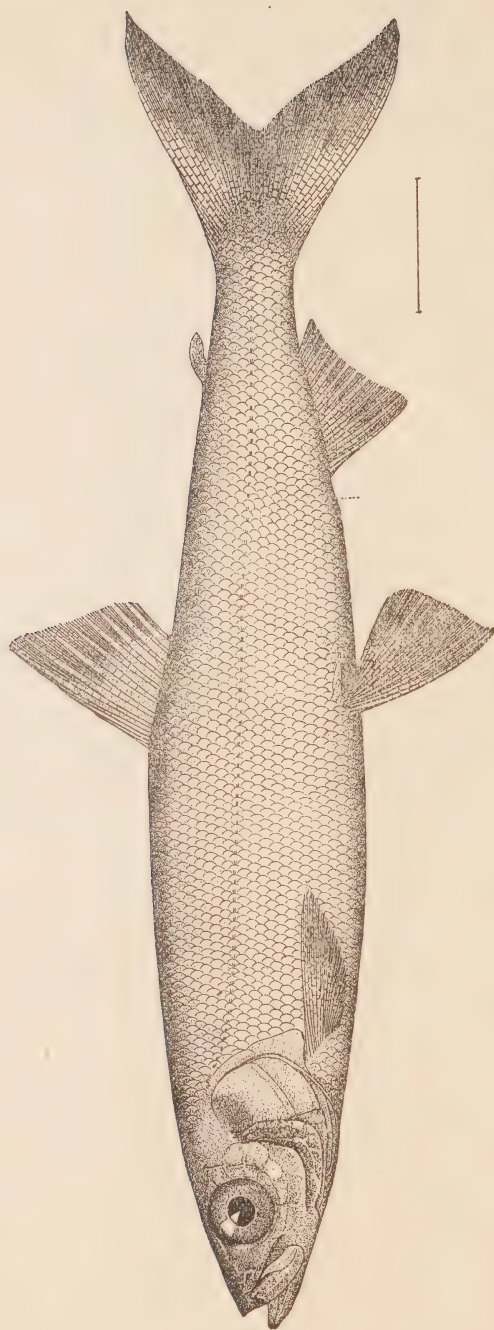




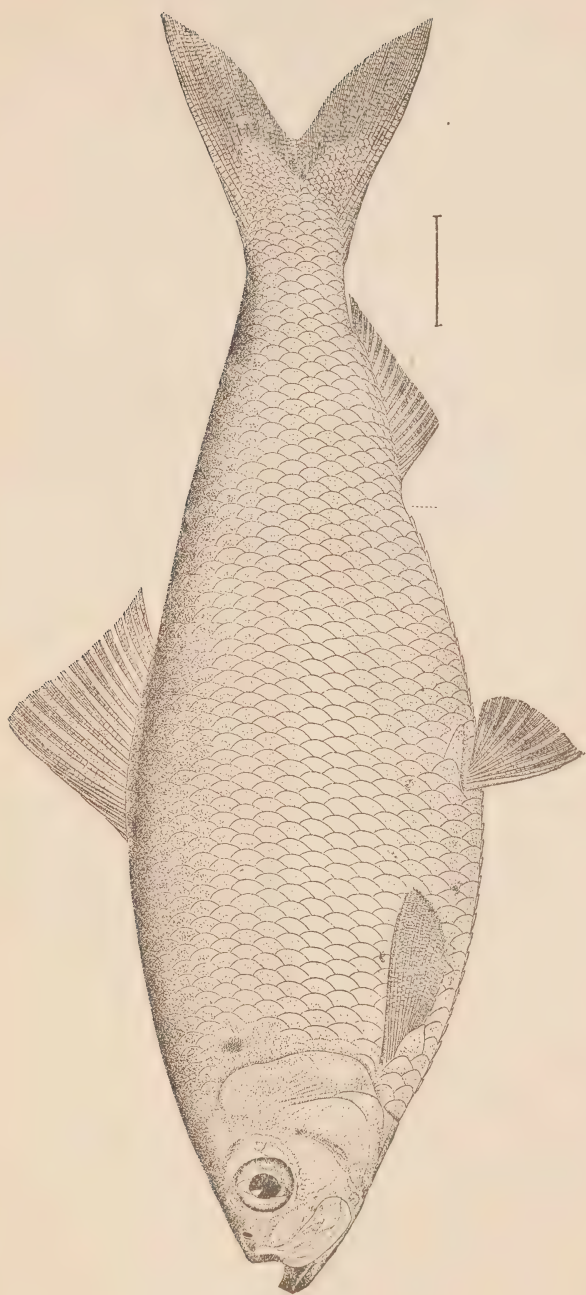
Whitefish. (*Coregonus clupeaformis*.)



Lake Herring. (*Coregonus artedii*.)

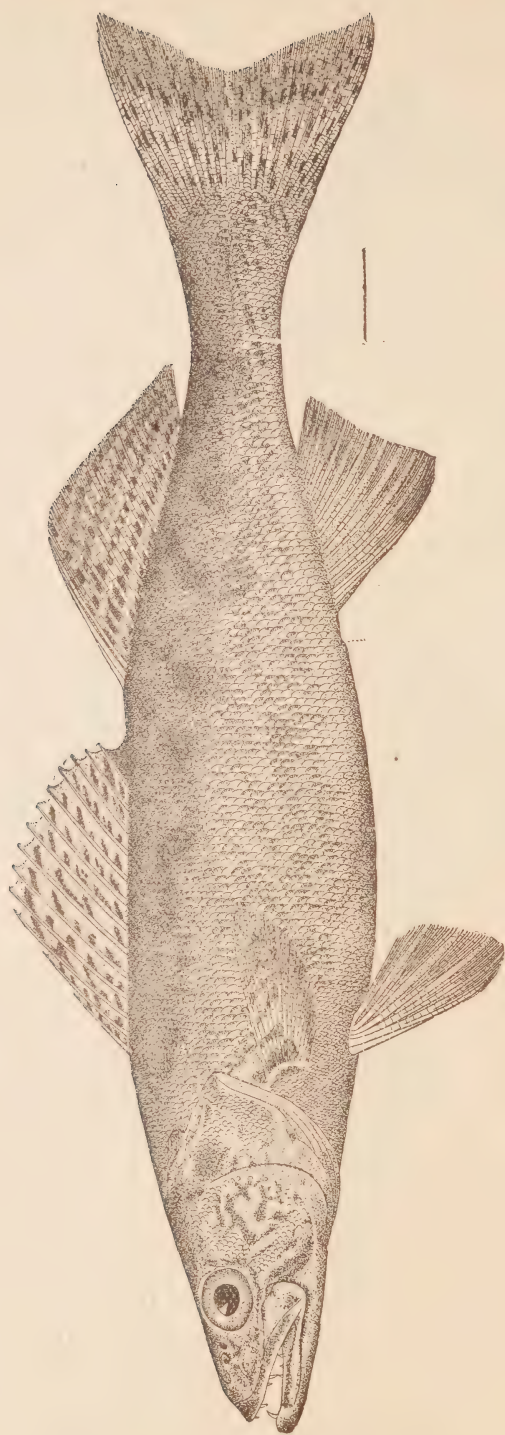


“Longjaw” of Lake Ontario. *Coregonus hoyi*.

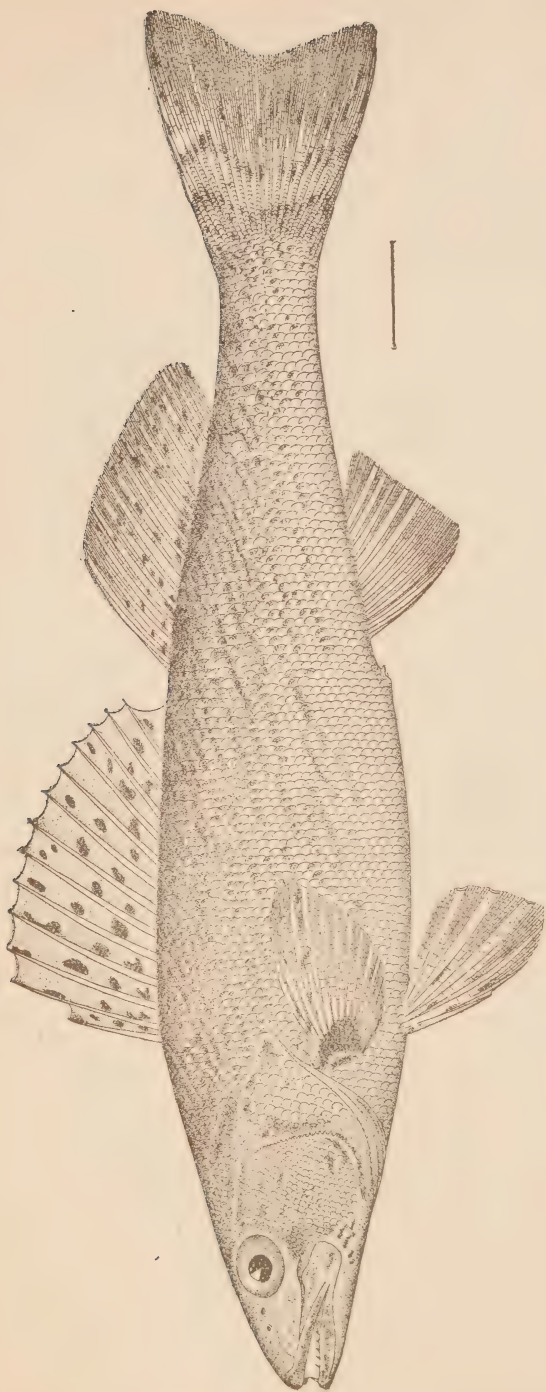


The Alewife or Branch Herring. (*Clupea vernalis*.)

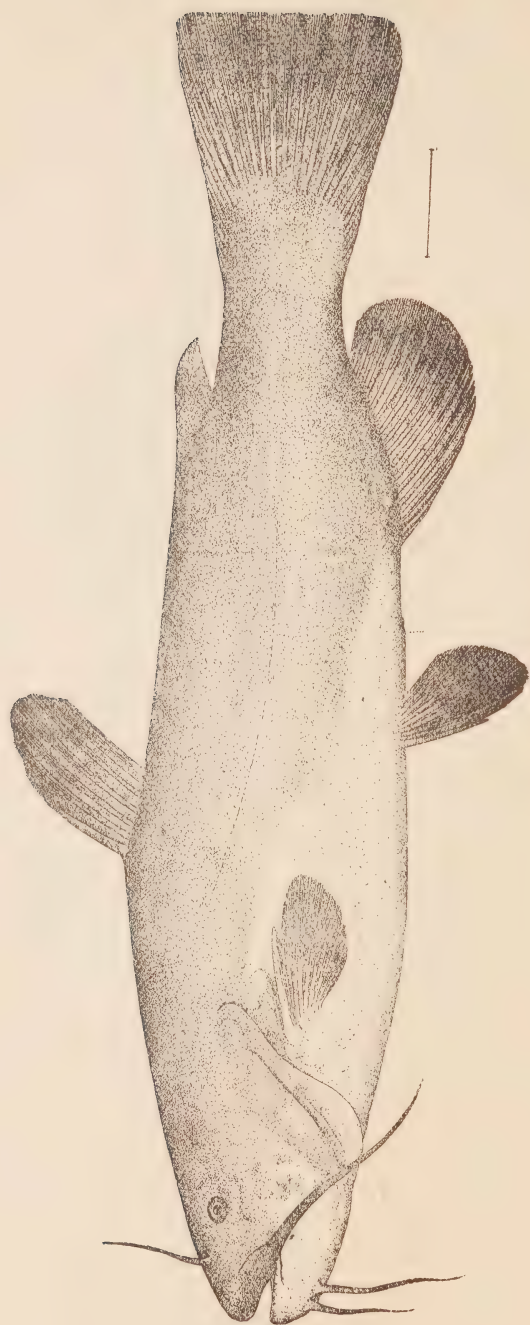




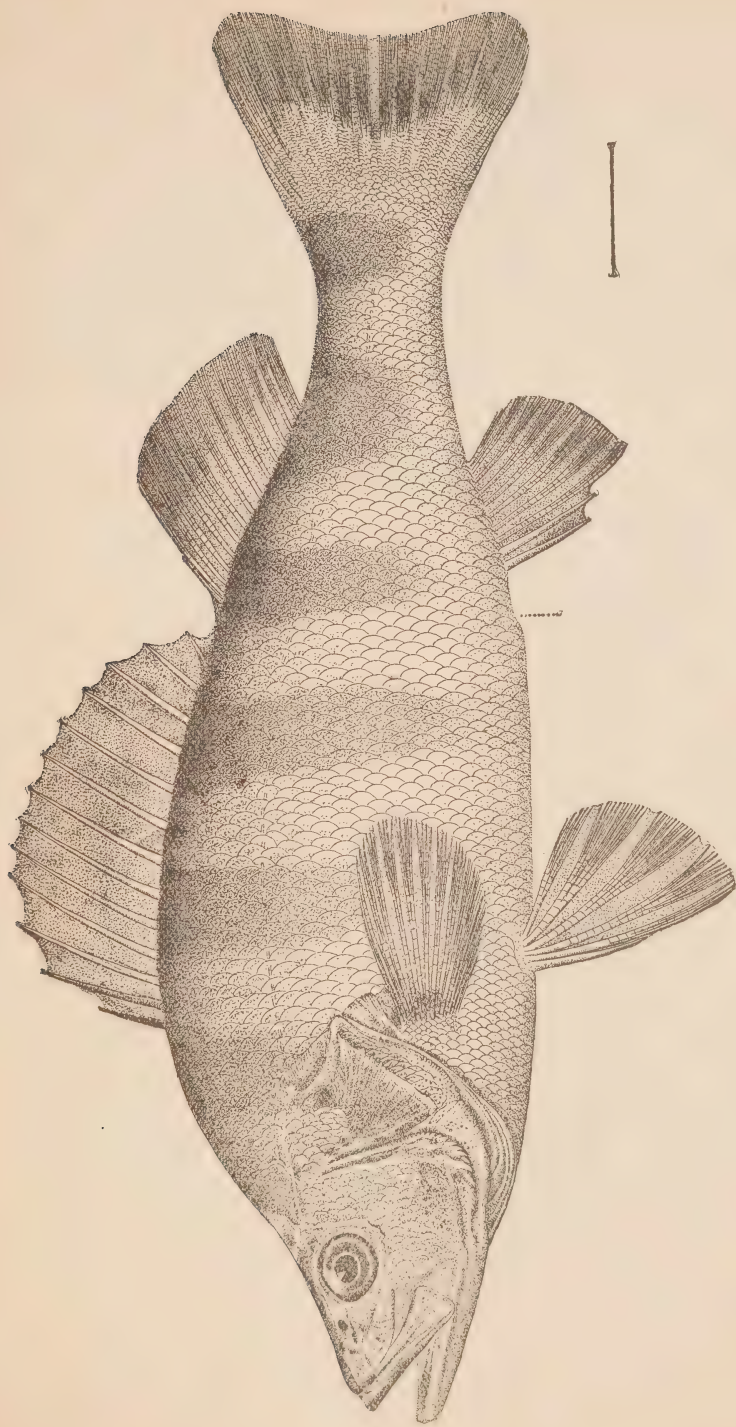
Pickarel, Dore, Pike-Perch, or Wall-eyed Pike. (*Stizostedium vitreum*.)



Sauger or Blue Pickerel. (*Stizostedium canadense*.)

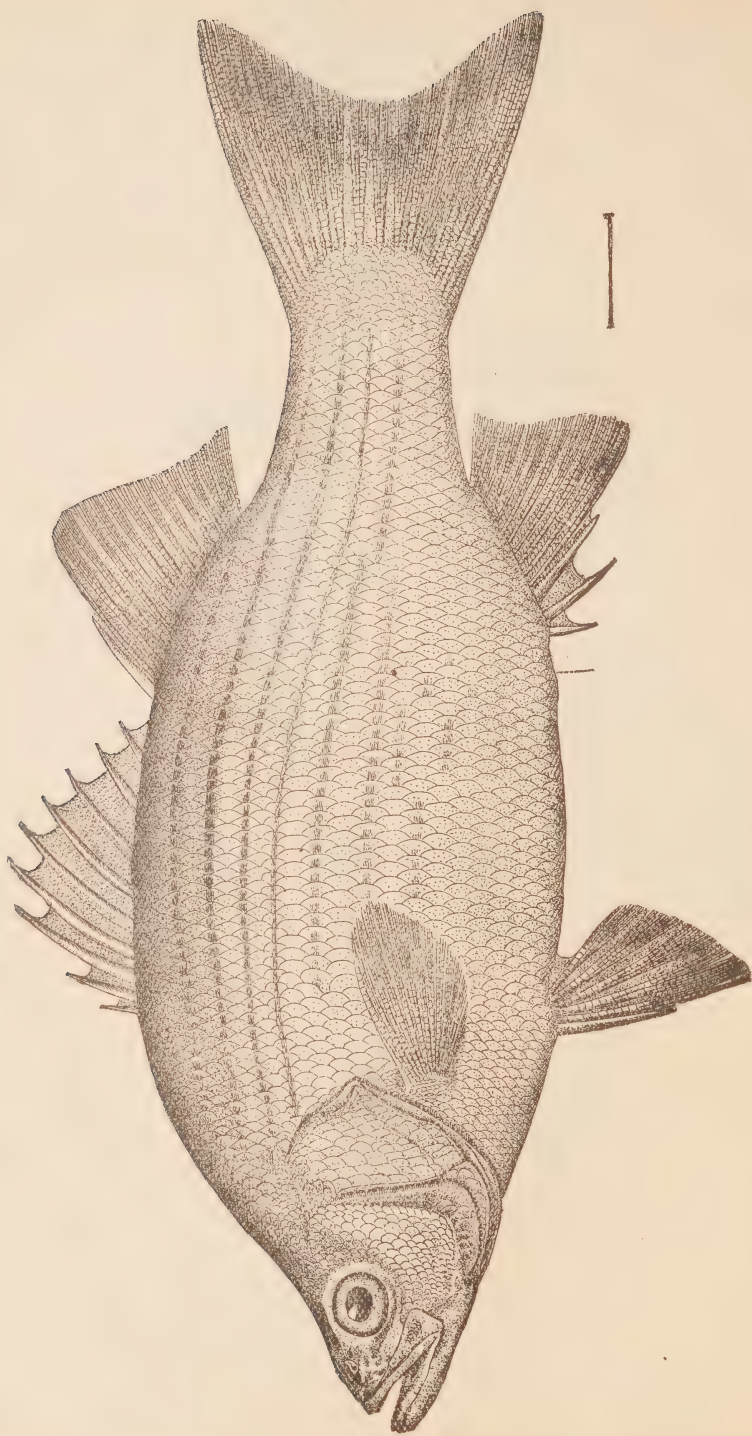


Bullhead. (*Ameiurus vulgaris*.)

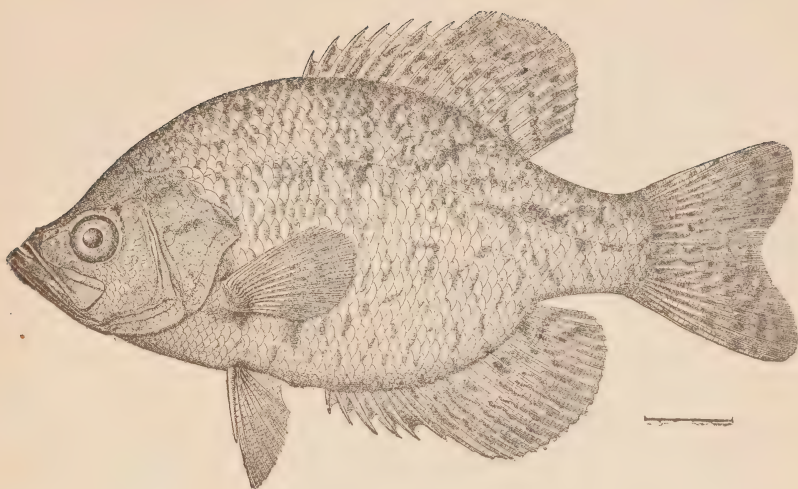


Yellow Perch. (*Perca americana.*)

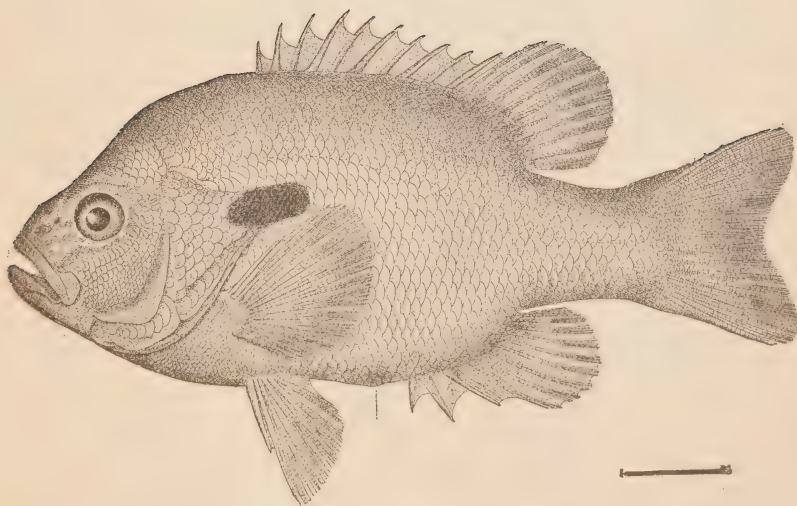




White Bass. (*Roccus chrysops*.)



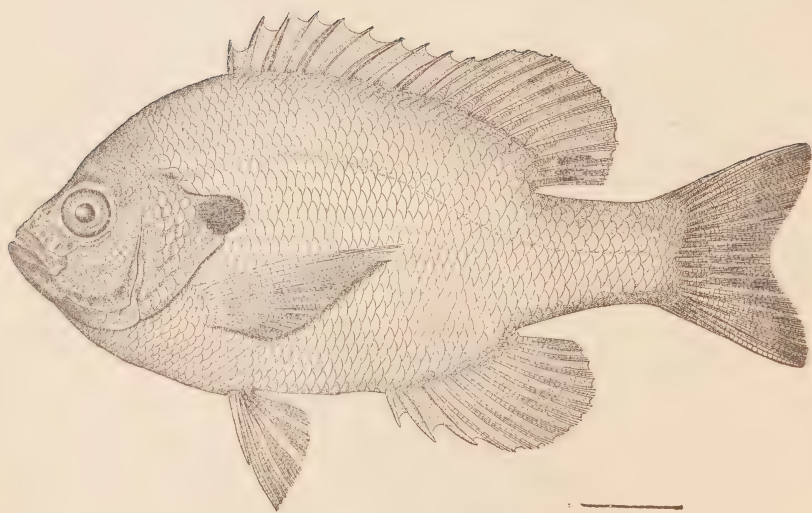
Grass Bass. (*Pomoxys sparoides*.)



Pumpkin Seed or Sun Fish. (*Lepomis gibbosus*.)

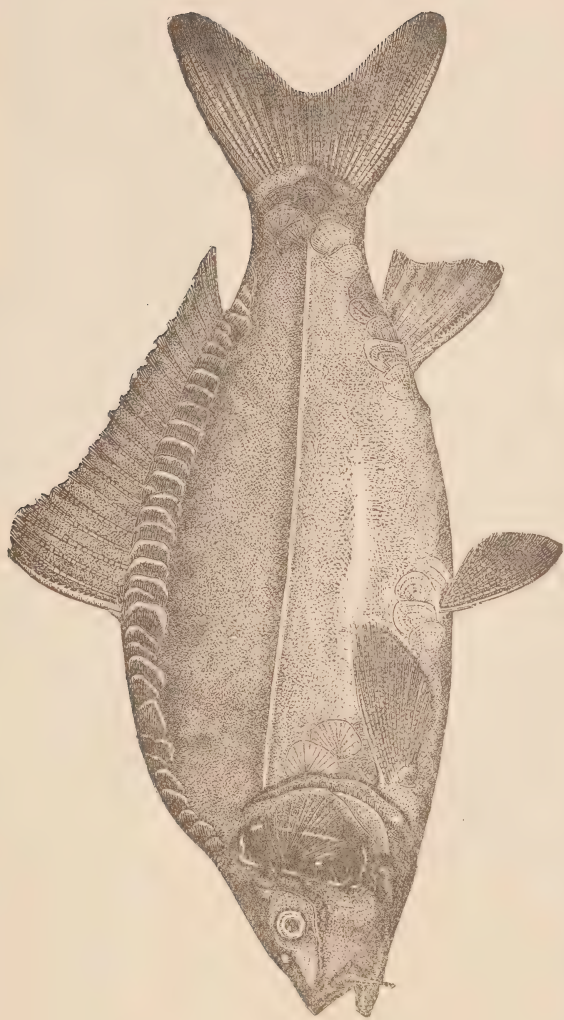


German Carp, (*Cyprinus carpio*.)



The Long-eared Sun Fish. (*Lepomis auritus*.)



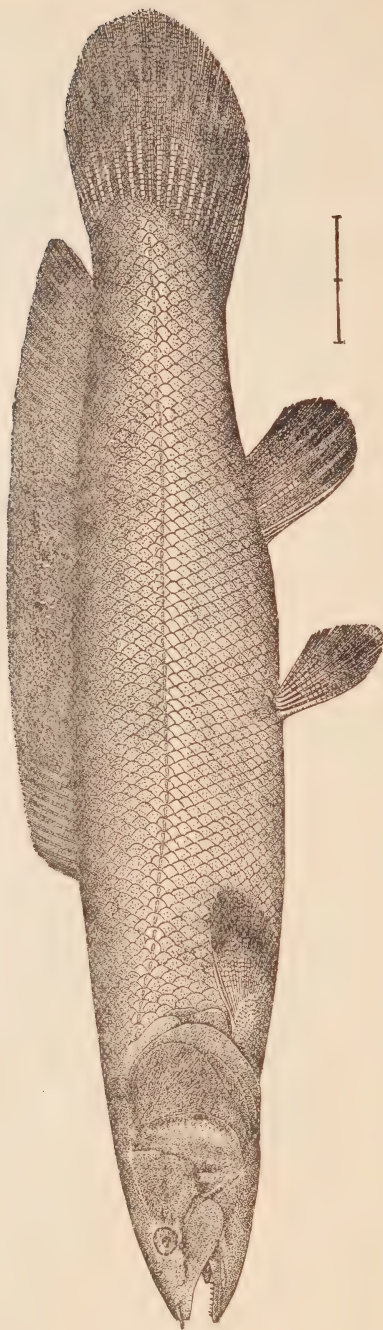


The Mirror Carp. (*Cyprinus carpio*.)





Ling or Burbot, (*Lota americana*.)



Dog Fish, Bowfin or Mud Fish. (*Amia calva*)





# SECOND ANNUAL REPORT

OF THE

## Temiskaming and Northern Ontario Railway Commission

TO

December 31, 1903

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PRINTED BY ORDER OF  
THE LEGISLATIVE ASSEMBLY OF ONTARIO

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B. W. FOLGER.  
P. E. RYAN,  
*Sec.-Treas.*

## Temiskaming and Northern Ontario Railway Commission

EDWARD GURNEY.  
F. E. LEONARD.  
M. J. O'BRIEN.

OFFICE OF THE SECRETARY-TREASURER,

TORONTO, Jan. 18th, 1904.

HON. F. R. LATCHFORD,

Commissioner of Public Works, Ontario,  
Toronto.

SIR,—I have the honour by direction to submit to you for presentation to the Legislature the report of the Temiskaming and Northern Ontario Railway Commission of the work done and moneys expended during the year ended Dec. 31st, 1903, under the Act, 2 Edward VII, chapter 9, as amended by the Act, 3 Edward VII, chapter 4.

I have the honor to be, Sir,

Your obedient servant,

P. E. RYAN,  
Secretary.

# The Temiskaming and Northern Ontario Railway Commission

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A. E. AMES, <i>Chairman</i> .....	Toronto.
EDWARD GURNEY .....	Toronto.
M. J. O'BRIEN .....	Renfrew.
B. W. FOLGER .....	Kingston.
F. E. LEONARD .....	London.

P. E. RYAN,  
*Secretary-Treasurer.*

## FINANCIAL ARRANGEMENTS.

The Commission had the honor of reporting under this heading in their First Annual Report a temporary issue of Bonds guaranteed by the Province and payable on demand after 1st July, 1903. This issue consisted of one hundred temporary Debenture Bonds of \$10,000 each. It was then thought that this amount would be sufficient to provide for the temporary requirements of the Commission. Owing to the lateness of the meeting of the Legislature, however, and the protracted length of the Session, it became apparent that in order to allow ample time for the preparation, advertisement and sale of the permanent bonds, provision would have to be made for further temporary financing. The Committee appointed by the Commission to arrange for the issue of the permanent bonds accordingly recommended to the Commission an issue of two hundred temporary bonds of \$10,000 each to conform with the provisions of the Amended Act of last Session. The Commission approved the recommendation of the Committee, and, with the approval of the Government, authorized the new issue, of which an equal number was substituted for the bonds already deposited with the banks. The date of maturity of this new issue of bonds was 1st October, 1903. In the meantime the Committee appointed to confer with the Government and prepare a form of bond extending over a term of years as contemplated by the Act, having ascertained the wishes of the Government in the premises, prepared a form of bond to meet the views of the Government, and an offering was made to the public in Canada, the United States, England and Scotland in the following terms:—

### PROSPECTUS OF THE TEMISKAMING AND NORTHERN ONTARIO RAILWAY.

(ONTARIO GOVERNMENT RAILWAY.)

*\$2,750,000 3½ per cent. 30-year Gold Bonds, consisting of 5,500 Bonds, each \$500 or £102 14s. 10d. Sterling.*

Guaranteed by the Province of Ontario.

Sealed tenders addressed to P. E. Ryan, Secretary-Treasurer, and marked "Tender for Bonds" will be received by the Temiskaming and Northern Ontario Railway Commission at its offices in Toronto up to 10 o'clock a.m. of Saturday, 12th September, 1903, for the purchase of \$2,750,000 of bonds, to be delivered in Toronto.

*\$2,000,000 on 1st October, 1903, and \$750,000 in three equal instalments of 1st December, 1903, 1st February, 1904, and 1st April, 1904.*

The bonds will all be dated 1st Oct., 1903, and will be payable thirty days from that date, with interest at 3½ per cent. per annum half yearly on the first days of April and October in each year.

The issue will consist of 5,500 bonds, each for \$500 or £102 14s. 10d. sterling. Both principal and interest will be payable in gold of the present standard of weight and fineness in Toronto or New York or in London, England, at the holder's option.

These bonds are issued under the authority and subject to the provisions of the Statute of the Province of Ontario, authorizing the construction of the



Temiskaming and Northern Ontario Railway, passed in the second year of His Majesty King Edward VII., Chapter 9, as amended by the Statute of the Province of Ontario, passed in the third year of the said reign, Chapter 4.

The total bond issue in respect of the said railway is not to exceed \$25,000 for each mile of the railway and extensions and branches.

The railway being a Government enterprise and the Commission being trustees for the Province, the payment of the principal and interest of the said bonds will be guaranteed by the Province of Ontario, and specifically secured by the bonds being by said Statutes made a charge upon the franchise, the right of way, the roadbed and all permanent fixtures and appurtenances of the line of railway, and on the proceeds of the sale of the land grant of 20,000 acres per mile, not including, however, the proceeds of the sale of timber or minerals thereon.

The said Statutes provide that a separate and distinct account shall be kept by the Commissioner of Crown Lands of the Province of the proceeds of the sale of said lands, which, together with the surplus income of the Commission from other sources, shall be paid over annually to the Provincial Treasurer to provide a sinking fund for the redemption of the bonds.

Such sinking fund is to be invested in such securities as the Lieutenant-Governor in Council from time to time shall think proper.

The contract was let in the month of October, 1902, for the construction of the main line from the Town of North Bay to Lake Temiskaming, a distance of 110 miles, work under which has been continuously prosecuted since that time.

Tenders for the deliveries of December, 1903, and February and April, 1904, must in all cases be for equal amounts of each delivery, subject to which tenders may be for the whole issue or for any part thereof, but where not for the whole issue must specify dates of delivery desired. Forms of tender will be supplied by the Secretary-Treasurer on application.

Bonds deliverable on 1st April, 1904, will have the first interest coupon detached, and will consequently bear interest from the date of delivery.

As to deliveries of December, 1903, and February, 1904, purchasers, in addition to the prices bid, will pay on delivery the interest accrued from 1st October, 1903.

Each tender must be accompanied by a deposit in the form of bank draft or accepted check on a chartered bank to the order of the Temiskaming and Northern Ontario Railway Commission for an amount equivalent to 5 per cent. of the par value of the amount of bonds covered by such tender, which deposit shall constitute a partial payment and be forfeited to the Commission in the event of a failure on the part of the tenderer to make full payment according to the terms thereof. The balance of the price must be paid on the respective dates of delivery as above.

The form of bond may be seen on application to the Secretary-Treasurer, and the validity thereof is certified by Mr. D. E. Thomson, K.C., Counsel for the Commission, whose report is appended.

Interest at  $3\frac{1}{2}$  per cent. from date of acceptance of tender will be allowed on the deposits of successful tenderers.

Deposits of unsuccessful tenderers will be promptly returned.

The Commission will not be bound to accept the highest or any tender.

Dated at Toronto, this 22nd day of July, 1903.

TEMISKAMING AND NORTHERN ONTARIO  
RAILWAY COMMISSION.

A. E. AMES, *Chairman.*

P. E. RYAN, *Secretary-Treasurer.*

The bonds referred to in the foregoing prospectus will constitute an obligation of the Province of Ontario, and will be equivalent to Government bonds, with the added security of the railway and land grant, as mentioned. When issued, countersigned and certified, as required by the Statutes, they are thereby declared conclusive of having been issued in pursuance of the Act of the Legislature, and of being guaranteed by the Province.

In my opinion, the bonds of the proposed issue will be a good and valid security, and binding on the Province, and a charge on the railway and land grant, according to their tenor, as set forth in the prospectus.

D. E. THOMSON,  
*Counsel for the Commission.*

Toronto, July, 1903.

Tenders as follows were opened at a meeting of the Commission held on 14th September.

*The Canadian Bank of Commerce.* 1,000 bonds (of \$500 each) on a basis to yield four per cent. per annum.

*The Bank of Ottawa.* 370 bonds (of \$500 each) on a basis to yield four per cent. per annum.

*The Home Life Association of Canada.* 100 bonds (of \$500 each) on a basis to yield four per cent. per annum.

*Wm. Tasker, Mount Forest, Ont.* \$4,000 for nine bonds (of \$500 each).

After careful consideration of the advisability of disposing of 2,000 bonds (of \$500 each) to those of the tenderers named above whose tenders were on a four per cent. basis, and to certain banks which had expressed a willingness to share in an allotment on such a basis, the conclusion arrived at by the Government and the Commission was that it seemed more advisable to make arrangements for further temporary financing, pending an opportunity for the disposition of the bonds on a favorable market. Accordingly, after the necessary preliminary negotiations had been completed, loans were effected through the banks aggregating \$2,300,000 to run for upwards of a year at five per cent. per annum. This plan provided for the then existing indebtedness and for the financial requirements for a considerable period ahead.

In view of the depressed condition of the money market ruling at the time, the Commission considered the foregoing arrangement a favorable one. Enquiries had been made in Montreal, New York, and London, England, as well as in Toronto, as to the best arrangements which the Commission could make for a temporary loan, with the result that although most favorable avenues were placed at the disposal of the Commission it was found impracticable to procure a loan for a period of fifteen months at a rate, including cost of exchange, etc., as favorable as a straight five per cent. rate free of all other charges.

It is perhaps well to report under this heading what has already been officially communicated to the Government, viz., that it having appeared to be the policy of the Government and the Legislature to give to the Commission a somewhat wide scope of discretion as to the character of the road to be constructed, the Commissioners proceeded in a manner which accorded with their best judgment of what was required under the circumstances. The decision of the Commissioners which was concurred in by the Government was that a railway should be constructed which would be creditable to the Province, and which would conform to the standard of a trunk line, having regard at the same time to proper economy in every direction. The Chief Engineer of the

Commission accordingly endeavored to obtain such grades and curvatures as would be consistent with this governing idea, and the Commission's contracts have been entered into and their arrangements have all been made with this object in view.

Below is an estimate of the cost of the road complete with an appropriate equipment of rolling stock:

Grading, including trestle work, bridging, etc .....	\$18,000	per mile.
Rails and fittings, ties, ballasting, telegraph line, track-laying, etc.....	7,000	" "
Terminals, sidings, stations, water-tanks, etc .....	1,755	" "
Rolling stock .....	3,000	" "
	\$29,755	" "

Having regard to the foregoing and to the liability that there always is of the most careful estimates being exceeded, the Commission felt it might be impracticable, although every effort would be made to keep down the cost of the road, to limit the expenditure to \$25,000 per mile, the limit of the bond issue stipulated in the Act, without adopting a policy which would be destructive of the whole character of the enterprise. In this connection it now seems necessary to make some provision for the operation of the road. Accordingly, it may be necessary later on to supplement the proceeds of the bond issue from some other source (unless the limit per mile of the bond issue be increased), and as neither the original Act nor the amended Act of last Session authorizes the Government to finance the enterprise in any other way than by the issue of bonds, it would seem prudent to make some provision for the raising of any additional funds that may be required.

#### TERMINAL ARRANGEMENTS AT SOUTHERN TERMINUS.

The matter of effecting a satisfactory agreement with either the C.P.R. or G.T.R. received the consideration of the Commission in the fall of 1902, and communications were addressed to the General Managers of the C.P.R. and the G.T.R. in this connection. The General Manager of the G.T.R. stated his willingness to enter into a joint agreement with the Commission for the construction and use of a line from Nipissing Junction to North Bay, including the putting in of a terminal yard and engine-house at the latter point, but that he would hardly feel warranted in going to the expense necessary for the establishment of these terminal facilities unless supported by an agreement for some fixed period of time, say, at least five years; that if the Commission thought it undesirable to enter into such an agreement he would suggest that an arrangement be entered into with the C.P.R. on a trackage rate for the use of the C.P.R. line between North Bay and Nipissing Junction—the Commission making deliveries to and taking business from the G.T.R. at the last-named point.

The General Manager of the C.P.R. expressed his willingness to permit the Commission to use the terminal facilities of the C.P.R. at North Bay, including the round house, station, yards and freight and passenger arrangements on terms to be agreed upon; and a committee was appointed to go to Montreal and negotiate with the C.P.R. and G.T.R. with a view of making terminal arrangements at North Bay or Nipissing Junction, or at both points. The Committee visited Montreal during the month of January, and the result of their visit was the execution of the agreement with the C.P.R. for terminal facilities and services which follows:—

*THIS AGREEMENT*, made the sixth day of April, one thousand nine hundred and three, between *The Canadian Pacific Railway*, hereinafter called "The Pacific Company," and of the first part; *The Temiskaming and Northern Ontario Railway Commission*, hereinafter referred to as "The Commission," of the second part;



Whereas, the Commission is under the authority of the Act of the Legislature of the Province of Ontario, 2 Edward VII. chapter 9, construing a railway from North Bay to Lake Temiskaming.

And Whereas the Commission desires to secure for a limited period the right to run its trains, both passenger and freight, over the railway track of the Pacific Company between Nipissing Junction and North Bay, and to use the yard and terminal facilities of the Pacific Company at North Bay, which track and yard facilities are hereinafter called "The Joint Premises."

And Whereas the Pacific Company is willing to grant the said right to the Commission upon the terms and conditions hereinafter contained;

Now therefore this agreement witnesseth, that the parties hereto, each for itself, its successors and assigns, hereby covenant and agree as follows, that is to say:

1. (a) The Pacific Company shall, during the continuance of this agreement, subject to the conditions hereinafter contained, allow the Commission to use the Pacific Company's track either way between Nipissing Junction and North Bay for trains, both passenger and freight.

(b) And also to use the yard and facilities of the Pacific Company at the last-named point.

(c) The use of the said terminal facilities at North Bay shall include, amongst other things, the use of switching engines, the services of all the station and yard staff of the Pacific Company, the making up and setting away by the Pacific Company of the trains of the Commission, the conducting and handling by the Pacific Company of all the freight and passenger business of the Commission at North Bay, and the ordinary station accounting in connection therewith, the Commission providing its own blank forms.

2. The Commission shall pay to the Pacific Company for the right above granted of using the track of the Pacific Company either way between Nipissing Junction and North Bay the sum of two dollars and forty cents for each passenger train, and two dollars and eighty cents for each mixed or freight, or any other class of train, run either way between the said two points.

3. For the terminal facilities above mentioned at North Bay the Commission shall pay to the Pacific Company the following compensation:—Fifty cents per car for each and every car, empty or loaded, arriving at, and a similar charge for each and every such car leaving the North Bay yard of the Pacific Company in the trains of the Commission, except cars of carload freight destined to points on or via the railway of the Pacific Company, and taken out of the said North Bay yard in the trains of that Company, and cars of carload freight arriving at the North Bay yard in the trains of the Pacific Company destined to points on or via the railway of the Commission, and taken out of the said yards on trains of the Commission; provided, however, that the minimum sum that shall be paid to the Pacific Company in respect to any one train of the Commission arriving at or leaving the said yard shall be four dollars. No charge shall be made under this clause for light engines, that is, engines without cars which arrive at or leave the said yard. In addition to the above-mentioned sums the Commission shall pay to the Pacific Company for the same facilities the sum of twenty-five cents per ton for every ton of freight handled at the freight sheds of the Pacific Company at North Bay and which is destined to or which originated at a point on the railway of the Commission. The Commission shall also pay the cost of providing a telegraph operator at the point of junction of the railway of the Commission with the railway of the Pacific Company (if the Pacific Company decides that such operator is necessary) and the cost of the necessary accommodation for such operator.



4. The Pacific Company shall give the same care and attention and do the same work to the passenger and freight cars arriving at and leaving North Bay in the trains of the Commission as it does at that point to its own cars of the same class in similar service, including, in the case of passenger cars, any labor engaged and the use of any tools required in the cleaning and lubricating of said cars and in supplying them with ice water, fuel and oil and other materials for lighting and lubricating, and the Commission shall pay the Pacific Company for the same the sum of one dollar for each passenger and baggage car so cleaned and cared for, and also the actual cost, plus ten per cent., of any ice water, fuel, oil, waste or any other supplies or material furnished, and of any inspection and repairs to the said passenger cars, including labor and material (the cleaning in the case of sleeping and parlor cars to be what is known as "railroad cleaning"), and in the case of freight cars arriving and leaving North Bay in the trains of the Commission, the Commission shall pay the Pacific Company the actual cost, plus ten per cent., of any inspection and repairs made, including labor and material, and of any oil, waste or other supplies furnished to such cars by the Pacific Company.

5. The Pacific Company shall for and in consideration of the amounts hereinafter specified respectively which the Commission hereby covenants to pay to the Pacific Company, perform the following services and furnish the following supplies for or in connection with the engines of the Commission at North Bay:

Handling, turning, housing and cleaning locomotives, including labor, dumping and lighting up fires .....	\$1.40 per engine.
Repairs .....	Cost plus 10 p.c.
Water .....	25 cents per tender.
Coal, cost, including freight charges plus 10 cents per ton for accounting	
Oil, waste and other running supplies .....	Cost plus 10 p.c.

6. Bills for moneys due the Pacific Company each month under Clauses two and three, four, five and seven or otherwise under this agreement are to be rendered by that Company as soon as possible after the end of that month, and the Commission shall pay any moneys so due within thirty days after the receipt of the bill for the same. If the Commission fails to make payment to the Pacific Company for thirty days after notice in writing from the Pacific Company to the Commission of such failure, this Agreement shall at the option of the Pacific Company cease and terminate.

7. The Pacific Company shall construct and maintain the necessary switch connection at the East end of the said North Bay yard, and the Commission shall reimburse the Pacific Company the cost of the same.

8. The Commission shall handle and move its train between the said switch connection and the North Bay yard, and between Nipissing Junction and the North Bay yard with its own engines and engine and train crews, entirely at its own expense. The enginemen and trainmen and other employees of the Commission when on its trains or engines or elsewhere on the joint premises shall be governed by the rules of the Pacific Company, and the movement and handling of the said trains and engines on the said premises shall be subject to the rules and regulations and to the directions of the Pacific Company.

9. The trains of the Pacific Company shall have preference on the joint premises over the trains of the Commission of the same or inferior class, and the trains of the Commission shall have preference over the trains of the Pacific Company of an inferior class.

10. The Pacific Company shall not pay or be liable for any mileage or other compensation for the services on the joint premises of any engines or cars arriving or leaving said premises in the trains of the Commission, but the Commission shall pay and be liable for and hereby covenants to indemnify the Pacific Company against any claim or claims for any such mileage or other compensation for the services of such engines or cars; provided, however, that in the case of cars to be delivered by the Commission to the Pacific Company the Commission shall assume such mileage or other compensation from the time such delivery is made, and that in the case of the cars to be delivered by the Pacific Company to the Commission, the Commission shall assume such mileage or other compensation from the time such delivery is made.

11. Each of the parties hereto shall as between the parties hereto be responsible for any damage or injury to person or property on its trains, for any damage to person or property done by any of its trains, and for any damage to its trains while on the track of the Pacific Company between the said North Bay yard and Nipissing Junction by virtue of Clause 1, Section "A," and Clause 2 hereof, except in the case of collision between one of its trains and a train of the other party due to the fault of the trainmen on one of them, in which case the party whose trainmen are at fault shall be responsible for and make good to the other party the loss and damage caused by the collision.

12. In the case of damage or injury to person or property caused by a train of either party, and in the case of damage by fire caused by a train while on the joint premises, the claims arising therefrom shall with the approval of the Commission be adjusted by the proper officer of the Pacific Company, and in satisfaction thereof the party in fault shall pay the full amount of the liability, but in the final settlement therefore such settlement shall include and embrace a full and entire release of both parties hereto. In case of damage or injury occurring to person or property upon a train of either party while on the joint premises the proper officer of the party on whose train such damage or injuries may occur shall adjust the claim therefor and the release shall be made to include and free both Companies from further liability.

13. The Pacific Company shall not be liable for any act or omission or breach of duty of any officer or employee of the Pacific Company in either the construction, alteration, maintenance or operation of the joint premises or facilities or any part thereof to be used under this Agreement by the Commission or in any of the services which the Pacific Company undertakes in this Agreement to perform for the Commission, and the Commission hereby covenants to indemnify the Pacific Company against every such claim.

14. Every disagreement which may arise between the parties hereto as to the construction of this Agreement or any part thereof, or as to the rights or liabilities of the parties or of either of them under it shall be decided by arbitration, the Commission and the Pacific Company each to appoint one Arbitrator and the two so appointed to appoint a third; but if either party fail for two weeks after appointment by the other party to appoint its arbitrator, or if the two when appointed fail for that period to appoint a third, then any Judge of the Court of Appeal of the Province of Ontario may appoint an arbitrator instead of such party or instead of the two arbitrators as the case may be, and the award in writing of a majority of the three arbitrators shall be conclusive and binding upon the parties hereto.

15. *This Agreement* shall remain in force until the fifteenth day of May, one-thousand nine-hundred and four, and thereafter until terminated by either party as hereinafter mentioned.

16. Either party may at any time after the said date give to the other party a written notice naming therein a day at least twelve months from the time of the giving of the said notice on which this Agreement shall terminate, and upon the day so named in such notice this Agreement shall come to an end.

*In Witness Whereof* each of the parties hereto has caused its Corporate Seal to be hereto affixed and this Agreement to be signed by its officials below named.

(Signed) THE CANADIAN PACIFIC RAILWAY COMPANY  
 (Seal.) " D. McNICOLL, 2nd Vice-President.  
 " A. R. G. HEWARD, Assistant Secretary.  
 " THE TEMISKAMING & NORTHERN ONTARIO  
 RAILWAY COMMISSION.  
 " A. E. AMES, Chairman.  
 (Seal.) " P. E. RYAN, Secretary.

#### CONTRACTS FOR STEEL RAILS.

The Commission had the honour of reporting in their First Annual Report the placing of an order with the Algoma Steel Company of 8,200 gross tons 80-lb. steel rails, A. S. C. E. Section, to conform with the Commission's specifications, at \$32.00 per gross ton f.o.b. cars North Bay, and at the time of the making of that report it was hoped that the order would be taken care of by the Algoma Steel Company. So much time, however, elapsed without the return of the contract executed by the Algoma Steel Company, that the matter was energetically taken up by the Commission with the Company, with the result that Mr. Theodore C. Search, Vice-President of the Consolidated Lake Superior Company, came to Toronto, attended a meeting of the Commission, and reported that notwithstanding the desire of the Company to accept the Commission's contract, it felt that owing to the non-completion of its blast furnaces and the exhaustion of its bessemer pig-iron supply, there was a doubt as to their ability to make the required deliveries, and it was thought that it would be best to make a frank statement of the situation declining the order. This Mr. Search did, and the Commission decided to call for new tenders at once. These were received as follows:

*B. J. Coghlin, Montreal.*—\$28.65 per gross ton, London payment. Shipments June, July and August.

*James Cooper, Montreal* (representing Chas. Cammell & Company, Limited, Sheffield, England).—\$28.85 per gross ton, f.o.b. cars North Bay. Cash against documents, Montreal. Deliveries as required.

*M. & L. Samuel, Benjamin & Company, Toronto.*—\$28.85 per gross ton, f.o.b. cars North Bay. Shipments as required. Name of makers not available.

*Naylor & Company, New York.*—*Tender No. 1.*—\$28.38 per gross ton, f.o.b. cars North Bay. Shipments July, August, September and October. London payment. This offer subject to acceptance Friday, 20th February, 1903. Tenders opened Saturday, 21st February, 1903.

*Tender No. 2.*—\$28.86 per gross ton, London payment. Shipments June, July and August. Subject to acceptance before one o'clock p. m., Saturday, 21st February, 1903.



*Gerald Lomer, Montreal.*—\$29.26 per gross ton, f.o.b. cars North Bay. Mr. Lomer would ask the Commission to delay the first shipment.

*Drummond, McCall & Company, Montreal.*—"Barrow" rails, \$29.55 per gross ton, f.o.b. cars North Bay. Shipments June, July and August.

*Charles Cassils, Montreal* (representing the Carnegie Steel Company).—\$30.15 per gross ton, f.o.b. cars North Bay.

Mr. Coghlin's quotation being for shipments June, July and August, which meant July, August and September deliveries, was not considered.

Messrs. Naylor & Company's offer of \$28.38 for acceptance on Friday had of course expired when the tenders were opened on Saturday, and in any case this tender would not have been acceptable, as the shipments offered were July, August, September and October, which were too late for the requirements of the Commission. Their second offer of \$28.86, being also for later shipments than required by the Commission, could not be considered.

The consideration therefore was narrowed down to the tenders of James Cooper, of Montreal, and M. & L. Samuel, Benjamin & Company, of Toronto: and the Chairman, Chief engineer and Secretary were appointed a Committee to consider these tenders, interview the representatives of both firms, and to close the matter as expeditiously and advantageously as possible. Messrs. M. & L. Samuel, Benjamin & Company had not furnished the name of the maker of the rail for which they were tendering, and the possibility of the imposition of an import duty on rails not being considered remote at that time, they were requested to definitely advise the Commission as to whether or not the rails were to be of English or German manufacture. Ample time was allowed for obtaining this information but it was not furnished, and the contract was awarded to Messrs. Cammell & Company, of Sheffield, England, through James Cooper, of Montreal, and is given below:

*MEMORANDUM OF AGREEMENT* made this Twenty-fifth day of February, in the year of our Lord one thousand nine hundred and three, between *Charles Cammell & Company, Limited*, of Sheffield, England, acting herein by its Agent, James Cooper, of Montreal, hereinafter called the "Contractor," of the one part; and *The Temiskaming and Northern Ontario Railway Commission*, hereinafter called the "Commission," of the other part;

Witnesseth, that the said Parties agree as follows:—

1. The Contractor agrees to furnish to the Commission free of all charges except Customs duties, if any, on cars at North Bay, Ontario, as hereinafter specified, eight thousand two hundred gross tons of steel rails in strict accordance with the Specifications hereto attached for the price of Twenty-eight dollars and eighty-five cents per gross ton of two thousand two hundred and forty pounds, f.o.b. cars at North Bay.

2. Not less than two thousand seven hundred gross tons of the said steel rails shall be so delivered during the month of May, one thousand nine hundred and three; not less than two thousand seven hundred additional gross tons during the month of June, one thousand nine hundred and three, and the balance of the contract, say two thousand eight hundred gross tons, during the month of July, one thousand nine hundred and three, time being agreed to be strictly of the essence of this contract.

3. In the event of stoppage or partial stoppage of the works of the Contractor, or shipments being delayed through strikes, accidents, breakage of machinery or other causes beyond the Contractor's control, of which the Commission shall be promptly notified, or in case any shipment or any part thereof shall be lost in transit, the Contractor shall be entitled to such addi-



tional time in respect of the whole or part of such deliveries, or any of them, as the Chief Engineer of the Commission for the time being shall decide and certify in writing to be fair and reasonable, having reference to the character and duration of such stoppage, delay or loss, and such Engineer shall be the sole and final judge as to the additional time to be allowed and as to what part of such deliveries or any of the same shall extend to, and his decision in every case shall be absolutely final and binding upon both parties. The last preceding clause of these presents shall be construed so far as relates to any portion of such deliveries or any of them affected by such extension of time as if the time fixed by the Engineer were the time fixed in said clause.

4. Within ten days from the date hereof the Commission shall communicate to James Cooper at Montreal an address in England where notice of the commencement of rolling and of the resuming of rolling from time to time may be given, and the Contractor shall give written notice at such address of the commencement of rolling at least fifteen days in advance of such commencement, and due notice of the resuming of rolling from time to time after the same shall have ceased.

5. The written certificate of the Inspector of the Commission provided for by said Specifications, certifying that the rails have been manufactured to his satisfaction in accordance with this contract, and the said Specifications shall be a condition precedent to the right of the Contractor to receive or be paid the price herein agreed to be paid for the same.

6. In case default shall be made by the Contractor in the delivery of any of the said rails in accordance with the terms of this contract, and the continuance of such default for thirty days, the said Commission may cancel this contract; but the Contractor shall nevertheless remain liable for all loss which may be suffered by the Commission by reason of the non-completion by the Contractor of this contract; provided, however, that credit shall be given to the Contractor notwithstanding such cancellation for the price of all rails which shall have been delivered by the Contractor in accordance with this contract and the said Specifications.

7. The cost of inspection provided for by the Specifications shall be borne by the Commission.

8. The Commission, in consideration of the premises, agrees to pay in Montreal funds for each shipment of said rails upon the arrival thereof in Montreal on presentation of invoices, English bills of lading and the Certificate of the Inspector of the Commission attached to each draft, but such payment shall not relieve the Contractor from the obligation to make deliveries at North Bay as aforesaid, nor from otherwise carrying out the terms of this Contract.

*In witness whereof* the Contractor has caused these presents to be executed on his behalf by James Cooper as his agent as aforesaid, and the said Commission has caused these presents to be executed under its Corporate Seal and hands of its Chairman and Secretary.

FOR CHAS. CAMMELL & Co.,

LIMITED:

(Sgd.) JAMES COOPER.

(Sgd.) F. H. HOPKINS.

In the presence of

(Sgd.) M. C. VENNOR.

FOR THE TEMISKAMING & NORTHERN

ONTARIO RAILWAY COMMISSION:

(Sgd.) A. E. AMES,

Chairman.

(Sgd.) P. E. RYAN,

Secretary.

(SEAL.)

In the presence of

(Sgd.) P. E. RYAN.

(Sgd.) H. W. PEARSON,

as to signature of P. E. Ryan.

## TEMISKAMING AND NORTHERN ONTARIO RAILWAY, 1902.

## SPECIFICATIONS FOR 80-LB. STEEL RAILS.

## SECTION.

*Section 1.* The section of the rail rolled shall conform to the American standard of the American Society of Civil Engineers, in accordance with plans attached, with an allowance in height of  $1/64$  of an inch under and  $1/32$  over, permitted in a delivery of 10,000 tons of rails. The fit of the fishing or "male" template shall be maintained perfect.

*Section 2.* The weight of the rail shall be kept as near to 80 lbs. per yard as is practicable after complying with Section No. 1.

## LENGTHS.

*Section 3.* The standard length of rail shall be 33 ft. at a temperature of 60 degrees Fahrenheit. Ten (10) p.c. of the entire order will be accepted in shorter lengths, varying by even feet down to 27 feet, and all such shorter rails shall be painted green on ends. A variation in length of one-quarter of an inch longer or shorter than the above specified lengths will be allowed.

## FINISH.

*Section 4.* The rails must be free from all mechanical defects and flaws, and shall be sawed square at the ends, and the burrs made by the saws carefully chipped and filed off, particularly under the head and on top of the flange.

*Section 5.* The rails must be smooth on the heads, straight in all directions, both surface and line, and without any twist, waves or kinks; particular attention being given to having the ends without kinks or drop. The hot straightening shall be carefully done so that gagging under the cold-press will be reduced to the minimum, and so applied that the rails shall not be made "lumpy." None such will be accepted except as No. 2 rails.

## DRILLING.

*Section 6.* Bolt holes  $1\frac{1}{16}$  inch in diameter shall be drilled through the web at  $2\frac{3}{16}$  inches from the bottom of the flange; the centre of the first hole  $2\frac{1}{2}$  inches from the end of the rail and  $6\frac{1}{2}$  from the centre of the first to the centre of the second hole. These holes must be accurate in drilling in every respect and left without burrs. (Plan attached.)

## BRANDING.

*Section 7.* The letters "T. & N. O. P.," weight of rail, number of charge, name of maker, month and year of manufacture, shall be marked in plain letters and figures on the side of the web of the rail, in such a position as not to be covered by the fish plates when laid in the track.

## COMPOSITION.

*Section 8.* The rail in composition must be hard, sound and tough, showing fine, dense grained metal on fracture. The carbon shall average 0.50 p.c.

within limits not less than 0.45 p.c., nor over 0.55 p.c. The phosphorus shall not exceed 0.07 p.c. The sulphur shall not exceed 0.075 p. c. The silicon shall not exceed 0.20 p.c., nor be below 0.10 p.c. The manganese shall not exceed 0.80 p.c. to 1.00 p.c.

#### HEAT TREATMENT.

*Section 9.* The number of passes and speed of train shall be so regulated that on leaving the rails at the final pass the temperature of the rail will not exceed that which requires a shrinkage allowance at the hot saw of six inches for rails of 80-lb. section, and no artificial means of cooling shall be used between the final pass and the hot saw.

#### TESTS.

*Section 10.* While the heat is being cast two test-ingots shall be made, the first from steel going into the first regular ingot, the other from metal representing the last one. These test ingots shall be 3 x 3 inches and not less than 4 inches long. From these bars at least one-half inch square shall be drawn at one heat by hammering. Each bar when cold shall be bent, without breaking, to not less than a right angle. Should one bar from a heat fail and another stand the test, a third bar may be taken from a bloom rolled from the ingot represented by the failed one. If this stands the test it shall be accepted in lieu of the failed one. If the makers choose, more than the two test-ingots may be taken, but they must be from the steel of the first and last regular ingots. If this is done and a test bar fail another one may be drawn from the duplicate ingot and tested, and, if it stands, accepted.

#### DROP TESTS.

*Section 11.* A rail-butt from each conversion shall be placed either head or base upwards on solid steel or iron supports, the distance apart of which in the clear shall be 3 feet for sections up to and including 70 lbs., and 4 feet for all heavier ones, and upon it shall be dropped a weight of 2,000 lbs., falling freely from a height of 16 feet for 70 lbs., and 20 feet for all heavier rails. Should a test fail to stand the drop without breaking a second one may be made. If it also fails all rails made from that heat shall be rejected; but if the second test stands then a third one shall be made, and if this be successful the rails of that conversion shall be accepted.

#### TREATMENT OF INGOTS.

*Section 12.* After the ingots are cast they shall be either constantly kept in an upright position until ready to be rolled, or else so maintained until the interior steel has had time to solidify.

*Section 13.* No "bled" ingots, or ingots from "chilled" heats shall be used in the manufacture of rails under this contract.

*Section 14.* No ingots from badly teemed heats shall be used, excepting as they shall be subject to the provisions of Section 18.

#### CUTTING OF BLOOMS.

*Section 15.* After cutting off or allowing for the "sand " or top end of each ingot, at least 12 inches more of seemingly solid steel shall be cut off



that end of the bloom, a greater length than 12 inches being preferred; and if, after cutting such a length the steel does not look solid, the cutting shall continue until it does.

#### HEATING.

*Section 16.* Care shall be taken to avoid overheating the steel, and under no circumstances shall a cinder heat be allowed; that is, a heat high enough to cause the cinder to run off the steel as it is being drawn from the furnace. This does not apply to cinder which may be sticking to the underside of the steel when drawn from a horizontal furnace, or to the bottom of an ingot when drawn from a soaking pit.

#### INSPECTION.

*Section 17.* Inspection representing the purchaser shall have free entry to the works of the makers at all times while this contract is being filled, and shall have all reasonable facilities afforded to satisfy them that the rails are being made in accordance with these specifications. The makers shall furnish them with the carbon determinations of each heat, and a sufficient number of complete analysis to represent the average steel of each day's work.

*Section 18.* The inspectors shall have authority to reject rails made from insufficiently sheared blooms, or from heats, the test pieces or drop tests of which have failed; or from badly poured heats, or from "chilled" heats, or from "bled" ingots. The rails made from insufficiently cut blooms, if otherwise perfect, to be afterwards received as No. 1 short rails if sufficient lengths have been sawed off to make an amount of steel equal to the original demand of 12 inches. The rails made from heats, the test pieces or drop tests of which have failed, may be accepted as No. 2 rails. The rails from a badly poured heat may be received as No. 2 rails, but if made from a "chilled" heat or "bled" ingot are to be absolutely rejected. By a badly poured heat is meant one which from any cause has been treated without the control of the operator. A "chilled" heat is one which by reason of the chilling of the steel has to be either pricked or poured over the top of the ladle. A "bled" ingot is one from the centre of which the liquid steel has been permitted to escape.

*Section 19.* Imperfectly drilled, straightened (except "lumpy") rails, or chipped and filed rails, shall be rejected, but will be accepted after being properly finished.

*Section 20.* Rails failing to comply with Section 1 will be rejected as No. 1 rails.

#### No. 2 RAILS.

*Section 21.* The requirement for No. 2 rails shall be the same as for No. 1, except that they will be accepted with a flaw in the head not exceeding  $\frac{1}{4}$  inch, and flaws in the flanges not exceeding  $\frac{1}{4}$  inch in depth, and may have been made from an imperfectly poured ingot, or from heats of which the test bars or drop tests have failed.

*Section 22.* No. 2 rails to the extent of 5 p.c. of the whole order will be received at a price 5 p.c. less than paid for No. 1 rails. All such rails must be painted white on ends and kept separate from No. 1 rails.

(Sgd.)

W. B. RUSSEL,  
Chief Engineer.

North Bay, Oct. 30th, 1902.



On 23rd February the Chief Engineer requisitioned for an additional quantity of 1,500 tons of the same quality rails as had been ordered from Mr. Cooper, and the Commission increased the contract with James Cooper from 8,200 gross tons to 9,700 gross tons, the provisions of the contract already signed to be considered as covering the additional quantity ordered, with the exception that the delivery of the additional quantity should be made not later than the month of September, 1903.

### CONTRACT FOR BALANCE OF RAILS REQUIRED TO COMPLETE TRACK-LAYING TO NEW LISKEARD.

The Chief Engineer having requisitioned for 6,000 gross tons of 80-lb. steel rails in accordance with the Commission's specifications, for delivery 2,000 tons during the month of May, 2,000 tons during the month of June, and 2,000 tons during the month of July, 1904, tenders were called for by the Commission and opened on 16th December. The tenders received were as follows:

*United States Steel Products Export Company.* \$25.15 per gross ton, f.o.b. North Bay, Ont.

*Drummond, McCall & Company, Montreal.* For "Barrow" rails, \$25.90 per gross ton, f.o.b. North Bay.

*A. T. Drummond & Company.* (Quoting for Guest, Keen & Nettlefolds, Limited, Birmingham, England.) \$25.79 per gross ton f.o.b. North Bay, Ont.

*A. G. Kidston & Company, Glasgow, Scotland.* £5 4s. 6d. per gross ton, London.

*M. & L. Samuel, Benjamin & Company, Toronto.* \$26.20 per gross ton, f.o.b. North Bay, Ont.

*B. J. Coghlin & Company, Montreal.* \$26.50 per gross ton, f.o.b. North Bay, Ont.

*Watson, Jack & Company, Montreal.* £5 4s. per gross ton, f.o.b. North Bay, Ont.

*Estate late James Cooper, Montreal.* (Quoting for Chas. Cammell & Co.) \$25.90 per gross ton, f.o.b. North Bay, Ont.

*Gerald Lomer, Montreal.* (Quoting for Suren, Hartman & Co., London.) \$26.50 per gross ton, f.o.b. North Bay, Ont. (And for the Lackawanna Steel Co.) \$25.40 per gross ton, f.o.b. North Bay, Ont.

After carefully considering the tenders the Commission decided they were too high, and to call for new tenders to reach the office of the Commission on or before Monday, the 28th instant.

New tenders were accordingly called for, and at the meeting on 29th December the following tenders were received:

*United States Steel Products Export Company, Montreal.* \$24.40 for first quality rails, f.o.b. cars North Bay, Ont. \$23.40 for second quality rails, f.o.b. cars North Bay, Ont.

*Watson Jack & Company, Montreal.* (Quoting for the Rheinische Stahlwerke in Ruhrort.) £5 1s. 0d., or \$24.57 at par of exchange, per gross ton, c.i.f. North Bay, Ont. Payment by approved bankers' sight letter of credit in London, available against shipping documents in London.

*Gerald Lomer, Montreal.* (Quoting for the Lackawanna Steel Company.) For first quality, \$24.70 per gross ton, f.o.b. cars North Bay, Ont. For second quality, \$23.70 per gross ton, f.o.b. cars North Bay, Ont.

*Estate of the late James Cooper, Montreal.* (On behalf of Messrs. Chas. Cammell & Company, Sheffield, England.) \$25.25 per gross ton, f.o.b. cars North Bay, Ont.

*A. T. Drummond & Company, Montreal.* (On behalf of Guest, Keen & Nettlefolds, Limited.) \$25.29 per gross ton, f.o.b. cars North Bay, Ont.

*Drummond, McCall & Company, Montreal.* (On behalf of the Barrow Hematite Steel Company, Limited, of Barrow-in-Furness, England.) \$25.65 per gross ton, f.o.b. cars North Bay, Ont.

*C. W. Leavitt & Company, New York.* \$25.80 per gross ton, f.o.b. cars North Bay, Ont. (Subject to cable confirmation by principals.)

*B. J. Coghlin & Company, Montreal.* (On behalf of the Pennsylvania Steel Company.) For best quality, \$26.20 per gross ton; f.o.b. cars North Bay, Ont.; with 5 p.c. second quality rails, \$25.20 per gross ton, f.o.b. cars North Bay, Ont.

The rails furnished by Messrs. Charles Cammell & Company in fulfillment of their first contract being highly commended by the Chief Engineer, who expressed a preference for them over American rails, the Commission decided to make an offer to Messrs. Charles Cammell & Company's representative of \$25 per gross ton, which was accepted, and a contract was entered into in the same terms as the former contract, the only differences being those of price and delivery.

### ORDERS FOR RAIL-FASTENINGS.

The purchase of 780,000 track spikes in accordance with blue print and specifications, at \$2.50 per 100 lbs., delivered f.o.b. cars North Bay, from Pillow & Hersey Manufacturing Company, Limited, of Montreal; of 89,000 track bolts, 4½ x7-8, as per drawing and specification, at \$3.45 per 100 lbs., delivered f.o.b. cars North Bay, from the Toronto Bolt & Forging Company, Limited, of Toronto, and of 89,000 "Positive" nut-locks for 7-8 bolt, at \$8.50 per thousand, delivered f.o.b. cars North Bay, from Messrs. A. Holden & Company, of Montreal, was reported in the Commission's First Annual Report. These orders were increased proportionately to the increase of 1,500 tons in the order for steel rails. The orders after having been increased stood as follows: 930,000 track-spikes, 105,000 track-bolts, 105,000 nut-locks.

Tenders for angle-bars were received as follows: The prices given are f.o.b. cars, North Bay; deliveries required were one-third each during the months of May, June and July, 1903.

*The Hamilton Steel & Iron Company, Hamilton.* \$1.90 per 100 lbs. Equivalent to \$42.56 per gross ton.

*James Cooper, Montreal.* \$43.75 per gross ton, duty paid.

*Gerald Lomer, Montreal.* \$1.81½ per 100 lbs., duty paid. Equivalent to \$40.65 per gross ton. This price was based on the then duty on angle-bars, namely, \$8 per gross ton. Mr. Lomer also submitted a tender of \$41.44 per gross ton, f.o.b. cars North Bay, in which he agreed to assume the risk of an increase in the duty.

*Naylor & Company, New York.* Exclusive of duty: subject to cable information on receipt of details to specifications.

*Algoma Steel Company.* \$48.16 per gross ton.

*M. & L. Samuel, Benjamin & Company.* \$1.62½ per gross ton in bond. duty. Equivalent to \$43 per gross ton.

*M. & L. Samuel Benjamin & Company.* \$1.62½ per gross ton in bond. Equivalent to \$36.40 per gross ton, plus \$8 duty, or \$44.40 per gross ton, duty paid.

*Nova Scotia Steel & Coal Company.* \$1.75 per 100 lbs. f.o.b. cars New Glasgow. Freight about 32½ cents per 100 lbs., or 2.07½ cents North Bay. Equivalent to \$46.47 per gross ton.

The tender of the Hamilton Steel & Iron Company being but \$1.12 per gross ton in excess of the tender of the German manufacturers, at which they agreed to assume the risk of an increase in duty, was accepted.

An order for 37,000 tie-plates, "Q. & W." pattern, to conform with blue print and specification, was placed with the Hamilton Steel & Iron Company, of Hamilton, at 11 1-3 cents each, delivered f.o.b. cars North Bay, which was the lowest tender received for a tie-plate in accordance with the drawing and specification of the Commission.

### CONTRACT FOR LOCOMOTIVES.

Quotations for four ten-wheeled Locomotive Engines, cylinders 19 inches diameter x 24 inch stroke, driving wheels 56 inches diameter, weight of engine about 133,000 lbs. in working order, weight of tender about 96,000 lbs. in working order, tank capacity about 4,000 imperial gals., were received from the Canadian Locomotive Company, Limited, of Kingston, of \$16,000 each delivered on tracks at Kingston, and from the Baldwin Locomotive Works, of Philadelphia, of \$11,100 each delivered on tracks at Toronto, exclusive of Customs duties, or with the duty added \$14,985. The American Locomotive Company were also asked to quote, but stated that their engagements were such that they could not promise the delivery asked for. The Commissioners favoured the placing of the order with the Canadian Company, as an advantage would accrue to the Commission in being able to obtain duplicate parts in Canada and this quotation was accordingly accepted. The contract, which was entered into between the Company and the Commission is given below. The price agreed upon was understood to be as low as any they were obtaining at the same period for engines of the same class.

*ARTICLES OF AGREEMENT*, made (in duplicate) this fourteenth day of April, in the year of our Lord, one thousand nine hundred and three.

Between *The Canadian Locomotive Co., Limited*, hereinafter called "The Contractor," of the first part; and *The Temiskaming and Northern Ontario Railway Commission*, hereinafter called "The Commission," of the second part:

*Witnesseth:* 1. In this contract the word "Inspector" shall mean the Inspector for the time being appointed by the Commission to represent and act for the Commission in the supervision of the construction and in the inspection and certification of the locomotive engines hereinafter referred to..

2. The Contractor will supply and provide all and every kind of work, labour, materials, articles and things whatsoever, necessary for the due construction and completion, and will well and duly build and complete in a perfect and workmanlike manner, four ten-wheeled locomotive engines with all necessary appliances for use on the line of the railway of the Commission in strict compliance with the specifications and drawings hereunto annexed to the complete satisfaction of the Inspector, and will deliver the same duly completed to the Commission free on the railway tracks of the Grand Trunk Railway Company, or of the Kingston and Pembroke Railway Company, at the City of Kingston, as follows: Two of the said locomotive engines on or before the thirtieth day of April, one thousand nine hundred and four; and



the remaining two on or before the thirty-first day of May, one thousand nine hundred and four, time being agreed to be material and of the essence of this contract.

3. The Inspector shall be the sole judge of all work and material done and supplied under this contract, and his decision on all questions in dispute with regard to any such work or material shall be final, and the whole work shall be executed to his satisfaction as evidenced by his certificate in writing, which certificate shall be a condition precedent to the right of the Contractor to be paid therefor. Provided, however, that in case the Contractor shall be dissatisfied with the decision of the Inspector on any question in dispute the Contractor shall on giving written notice to the Secretary of the Commission within ten days from notice to the Contractor of such decision have the right to appeal therefrom to the Superintendent for the time being of motive power of the Canadian Northern Railway Company, and in case of any such appeal the decision of such Superintendent thereon shall be final and binding upon both parties.

4. The Inspector and all persons from time to time authorized by him in that behalf shall have free entry and access to the works of the Contractor at all times while this contract is being performed, and shall have all reasonable facilities afforded to him and his representatives as aforesaid to satisfy them that the same is being carried out and performed in accordance with this contract.

5. The acceptance and payment for any of the said engines by the Commission shall not be considered as any waiver of the obligations of the Contractor with reference to the others.

6. This contract shall not be considered as fully completed until the guarantee clause in the attached specification respecting wheels, springs, axles, etc., has been fully complied with. The books kept in the office of the Mechanical Superintendent of the Commission shall be taken as final and conclusive evidence of the time said wheels, springs, axles, etc., have lasted in service.

7. The Commission in consideration of the premises covenants with the Contractor that the Contractor from time to time and in all respects having fulfilled and performed the provisions of this contract (except the fulfillment of the guarantee, which is to continue for two years) on the Contractor's part intended to be fulfilled and performed will be paid for, and in respect of each of the said engines so delivered as aforesaid the sum of sixteen thousand five hundred (\$16,500) dollars cash payment to be made within thirty days after delivery of each engine.

*In witness whereof* the said parties have caused these presents to be executed under their respective Corporate Seals and under the hands of the proper officers in that behalf.

CANADIAN LOCOMOTIVE COMPANY, LIMITED,

(Sgd.) C. BIRMINGHAM, (SEAL.)  
*Managing Director.*

(Sgd.) A. E. AMES, (SEAL.)  
*Chairman.*

(Sgd.) P. E. RYAN,  
*Secretary.*



## CONTRACT FOR FLAT AND BOX-CARS.

Tenders to furnish one hundred flat and fifty box-cars, in accordance with the plans and specifications of the Commission, were received as follows:

*Messrs. Rhodes, Curry & Company.* For the flat-cars, \$710 each, delivered at North Bay. For the box-cars, \$960 each, delivered at North Bay. These prices include an allowance of \$40 for the transportation of each car from Amherst, N. S., to North Bay, which it was thought by the Company might be eliminated altogether, or considerably reduced, by having the cars loaded for the West and hauled free or at a reduced rate, and they promised to give the Commission the benefit of any saving which could be effected in this way.

*The Rathbun Company.* For the flat-cars, \$729 each, delivered at North Bay, the Commission to supply the air-brakes. For the box-cars, \$950 each, delivered at North Bay, the Commission to supply the air-brakes. Adding the cost of air-brakes (\$25 per set), to these prices, the cars would cost as below:—For the flat-cars, \$754, delivered at North Bay. For the box-cars, \$975, delivered at North Bay.

*The Crossen Car Manufacturing Company.* For the flat-cars, \$750 each, delivered at North Bay. For the box-cars, \$1,035 each, delivered at North Bay.

*Drummond, McCall & Company.* (For the Algoma Central and Hudson's Bay Railway Company.) For the flat-cars, \$765.48, delivered at North Bay. For the box-cars, \$870.64, delivered at North Bay.

The decision of the Commission was that the order for the flat-cars should be given to Messrs. Rhodes, Curry & Company at the price quoted, and that the order for the box-cars should be placed with the Rathbun Company, of Deseronto, Ont., whose price was only slightly in excess of that of the Nova Scotia house, provided that the Rathbun Company would be prepared to build the cars for a price less than or not exceeding that of the Nova Scotia Company. The Company subsequently reduced their price for the box-cars to \$930 f.o.b. North Bay, the Commission to furnish the air-brakes. The contracts entered into with Messrs. Rhodes, Curry & Company and the Rathbun Company, respectively, follow:—

**ARTICLES OF AGREEMENT** made (in duplicate) this Fourteenth day of August, one thousand nine hundred and three, between *Rhodes, Curry & Company, Limited*, hereinafter called "The Contractor," and *The Temiskaming and Northern Ontario Railway Commission*, hereinafter called "The Commission."

*Witnesseth:*

1. In this contract the word "Inspector" shall mean the Inspector for the time being appointed by the Commission to represent and act for the Commission in the supervision of the construction and in the inspection and certification of the platform cars hereinafter referred to.

2. The Contractor will supply and provide all and every kind of work, labor, materials, articles and things whatsoever for the due construction and completion, and will well and duly build and complete in a perfect and workmanlike manner one hundred platform cars, with all necessary appliances for use on the line of railway of the Commission, in strict compliance with the specifications hereto annexed, and with the plans and drawings relating thereto (save and except that the Westinghouse automatic quick-action air-brake apparatus in said specifications mentioned shall be furnished by the Com-

mission, subject to the said cars being properly equipped therewith by the Contractor) to the complete satisfaction of the Inspector, and the said Contractor will deliver the said cars duly completed to the Commission, free, on the railway tracks of the Commission at the town of North Bay during the month of May, one thousand nine hundred and four, or earlier, if such earlier delivery shall be agreeable to both of the parties hereto, time being agreed to be material and of the essence of this contract.

3. Subject only to the right of appeal provided for by the said specifications the Inspector shall be the sole judge of all work and material done and supplied under this contract, and his decision on all questions in dispute with regard to any such work or material shall be final, and the whole work shall be executed to his satisfaction, as evidenced by his certificate in writing, which certificate shall be a condition precedent to the right of the Contractor to be paid therefor.

4. The Inspector and all persons from time to time authorized by him in that behalf shall have free entry and access to the works of the Contractor at all times while this contract is being performed, and shall have all reasonable facilities afforded to him and his representatives as aforesaid to satisfy them that the same is being carried out and performed in accordance with this contract.

5. The acceptance and payment for any of the said cars by the Commission shall not be considered as any waiver of the obligations of the Contractor with reference to the others.

6. This contract shall not be considered as fully completed until the guarantee clause in the attached specifications respecting wheels, springs, axles, etc., has been fully complied with. The records of the Commission shall be taken as final and conclusive evidence of the time the said wheels, springs, axles, etc., have lasted in service.

7. The Commission in consideration of the premises covenants with the Contractor that the Contractor from time to time and in all respects having fulfilled and performed the provisions of this contract, except the fulfillment of the guarantee, which is to continue for three years, on the Contractor's part intended to be fulfilled and performed, will be paid for and in respect of each of the said cars so delivered as aforesaid the sum of \$681.50 cash payments to be made within thirty days after delivery of each car; provided and it is hereby understood and agreed, that the said sum of \$681.50 shall include the item of \$40 for the transportation of each car to the railway tracks of the Commission at North Bay; and in the event of the Contractor being able to make arrangements by which any car may be loaded and transported to North Bay as aforesaid, free of costs or for any less cost than \$40, then the Commission shall receive the benefit of any such arrangement, and the price to be paid the Contractor for every such car so transported free of cost, or at a less cost than \$40, shall be reduced accordingly.

*In Witness Whereof* the said parties have caused these presents to be executed under their respective corporate seals, and under the hands of the proper officers in that behalf.

SIGNED, SEALED AND DELIVERED  
in the presence of  
G. GOLDING BRICE.

RHODES, CURRY & CO., Limited.  
(Signed) N. CURRY, President.  
" J. M. CURRY, Sec'y-Treas.

(SEAL)

(Signed) THE TEMISKAMING & NORTHERN  
ONTARIO RAILWAY COMMISSION.

(Signed) A. E. AMES, Chairman.  
" P. E. RYAN, Secretary.

*ARTICLES OF AGREEMENT* made (in duplicate) this Fourteenth day of August, one thousand nine hundred and three, between *The Rathbun Company*, hereinafter called "The Contractor," of the first part; and *The Temiskaming and Northern Ontario Railway Commission*, hereinafter called "The Commission," of the second part.

*Witnesseth:*

1. In this contract the word "Inspector" shall mean the Inspector for the time being appointed by the Commission to represent and act for the Commission in the supervision of the construction and in the inspection and certification of the box cars hereinafter referred to.

2. The Contractor will supply and provide all and every kind of work, labour, materials, articles and things whatsoever for the due construction and completion, and will well and duly build and complete in a perfect and workmanlike manner fifty box-cars, with all necessary appliances for use on the line of railway of the Commission, in strict compliance with the specifications hereto annexed, and with the plans and drawings relating thereto (save and except that the Westinghouse automatic quick-action air-brake apparatus in said specifications mentioned shall be furnished by the Commission subject to the said cars being properly equipped therewith by the Contractor) to the complete satisfaction of the Inspector, and the said Contractor will deliver the said cars duly completed to the Commission free on the railway tracks of the Commission at the Town of North Bay during the month of May, one thousand nine hundred and four, or earlier if such earlier delivery shall be agreeable to both of the parties hereto, time being agreed to be material and of the essence of this contract.

3. Subject only to the right of appeal provided for by the said specifications the Inspector shall be the sole judge of all work and material done and supplied under this contract, and his decision on all questions in dispute with regard to any such work and material shall be final, and the whole work shall be executed to his satisfaction as evidenced by his certificate in writing, which certificate shall be a condition precedent to the right of the Contractor to be paid therefor.

4. The Inspector and all persons from time to time authorized by him in that behalf shall have free entry and access to the works of the Contractor at all times while his contract is being performed, and shall have all reasonable facilities afforded to him and his representatives as aforesaid to satisfy them that the same is being carried out and performed in accordance with this contract.

5. The acceptance and payment for any of the said cars by the Commission shall not be considered as any waiver of the obligations of the Contractor with reference to the others.

6. This contract shall not be considered as fully completed until the guarantee clauses in the attached specifications respecting wheels, springs, axles, journal bearings and journals have been fully complied with. The records of the Commission shall be taken as final and conclusive evidence of the time the said wheels, springs, axles have lasted in service, and of the time the said journal bearings and journals have run cool as by said specifications required.

7. The Commission, in consideration of the premises covenants with the Contractor that the Contractor from time to time and in all respects having fulfilled and performed the provisions of this contract (except the fulfillment of the guarantee as to the wheels, springs, axles, etc., which is to continue



for three years, and the guarantee as to journal bearings and journals, which is to continue for two months; on the Contractor's part intended to be fulfilled and performed will be paid for, and in respect of each of the said box cars so delivered as aforesaid the sum of nine hundred and thirty dollars cash payments to be made within thirty days after delivery of each car.

*In Witness Whereof* the said parties have caused these presents to be executed under their respective Corporate Seals, and under the hands of the proper officers in that behalf.

SIGNED, SEALED AND DELIVERED  
in the presence of

(Signed)	THE RATHBUN COMPANY,	(SEAL.)
"	per E. WALTER RATHBUN, Assist. Gen. Manager.	
"	" C. A. MILLENER, Sec'y-Treas.	
"	THE TEMISKAMING & NORTHERN ONTARIO RAILWAY COMMISSION.	(SEAL.)
"	A. E. AMES, Chairman.	
"	P. E. RYAN, Secretary.	

### TIE CONTRACTS.

In their First Annual Report the Commission reported the letting of a contract for 175,000 railway ties. Towards the close of February, 1903, the Chief Engineer reported that the Tie Contractor, Thos. Wallace, was making satisfactory progress, and as the grading was progressing faster than he had at first expected the Commission would require the delivery of more ties than arranged for, and that as the season was already so far advanced it would be difficult for other parties to get the extra ties out during the spring or summer season, and as the contractor for the 175,000 ties would succeed in filling his contract at the very low price at which the contract was closed, he would recommend that the Commission contract with the Tie Contractor to furnish an additional quantity of 50,000 ties at the price of 25 cents each if the Contractor should be allowed to cut in the Forest Reserve, or 27 cents each if he were not permitted to cut in the Reserve. The Commission approved of the Engineer's recommendation, and a new contract was entered into with Thos. Wallace, a copy of which is given below:

*ARTICLES OF AGREEMENT* made (in duplicate) this 23rd day of March, in the year of our Lord one thousand nine hundred and three.

Between *Thomas Wallace*, of the Town of North Bay, in the District of Nipissing, Merchant, hereinafter called "The Contractor," of the first part; *The Temiskaming and Northern Ontario Railway Commission*, hereinafter called "The Commission," of the second part; and *William McKenzie*, of the said Town of North Bay, Customs Officer, and *Edgar Seymour Reade*, of the City of Toronto, and County of York, Manufacturer, hereinafter called "The Sureties," of the third part.

*Whereas*, by Articles of Agreement made between the parties of the first and second parts hereto, and dated the seventh day of November, in the year of our Lord one thousand nine hundred and two, the Contractor agreed to deliver to the Commission at such points on the first sixty miles of the right



of way of the railway of the Commission, as might from time to time be directed and approved by the Commission's Chief Engineer, one hundred and seventy-five thousand railway ties in accordance with, on the terms and at the price set out in the said contract.

*And Whereas* the Contractor and the said William McKenzie by their joint and several bond attached to the said contract bound themselves to the Commission in the penal sum of Three thousand dollars for the due and faithful performance by the Contractor of the said contract according to the true intent and meaning thereof, as by said bond more fully appears.

*And Whereas* the said Edgar Seymour Reade as additional security for the due performance by the Contractor of the said contract deposited with the Commission the sum of fifteen hundred dollars cash.

*And Whereas* it has now been agreed between the parties hereto that in addition to the said one hundred and seventy-five thousand railway ties, the Contractor shall, subject to the terms and in consideration of the price hereinafter mentioned, sell and deliver to the Commission fifty thousand additional railway ties, and that the said bond of the Contractor and the said William McKenzie attached to the said contract of the seventh day of November, in the year of our Lord one thousand nine hundred and two, and the said sum of Fifteen hundred dollars cash deposited by the said Edgar Seymour Reade as aforesaid, shall be held by the Commission as and shall constitute security for the due performance by the Contractor of this Agreement, as well as of the said Agreement of the Seventh day of November, in the year of our Lord one thousand nine hundred and two.

*Now these presents Witness:* 1. *That* the Contractor for the consideration hereinafter mentioned hereby agrees to deliver to the Commission at such points from the sixtieth to the seventy-third mile from North Bay of the right of way of the Temiskaming and Northern Ontario Railway as may from time to time be directed and approved by the Commission's Chief Engineer or his agent duly authorized in that behalf, fifty thousand railway ties made from sound hemlock, tamarack, or cedar timber of good merchantable quality, and of the following dimensions, namely, seven inches thick, and not less than six inches face inside of bark on both faces at the small end or in every portion of the tie, and exactly eight feet long, to be sawn or hewed on two parallel sides and sawn or hewed square on both ends, to be delivered and piled completely ready for inspection as follows:—At least twenty-five thousand on or before the First day of October, one thousand nine hundred and three, and the balance, say twenty-five thousand, on or before the first day of November, one thousand nine hundred and three, or on or before such other dates as on the written application of the Contractor for an extension of time the Engineer may in writing substitute for said dates or either of them. Time shall be deemed to be material and of the essence of this contract.

2. Ties shall be piled with even ends on one side, and each pile shall be on a level with and not less than fifteen feet nor more than twenty-five feet from the centre line of the right of way, with at least three feet between piles to permit inspection at both ends of the ties. Ties taken from the water shall be piled in square piles in such manner as to permit of free circulation of air around each tie.

3. The Contractor shall pay in cash for all ties purchased by him from the price of which shall be payable either wholly or partly in goods or otherwise than in actual cash.

4. The Contractor shall be bound to furnish satisfactory evidence to the Engineer from time to time, as requested by the Engineer, of his having complied with the provisions of the last preceding clause hereof, and as to the land upon which all ties delivered from time to time have been cut, and that the Contractor or other party cutting same had the legal right to cut such ties and dispose of them, and that the same are free from all liens and attachments; and until such evidence to the satisfaction of the Engineer is furnished, and until ties from time to time are actually accepted and marked by the Engineer the same shall be at the risk of the Contractor. Cash payments equal to about ninety per cent. of the value of the ties so delivered and accepted shall be made to the Contractor monthly on the written certificate of the Engineer that such ties have been so delivered and accepted and such evidence furnished as aforesaid, and the said certificate shall be a condition precedent to the right of the Contractor to be paid the said ninety per cent. or any part thereof. The remaining ten per cent. shall be retained until the final completion of the whole work to the satisfaction of the Engineer, and until the Engineer shall be satisfied that all wages of all workmen, labourers and servants of the Contractor and of all sub-contractors under him, as well as the price of all ties purchased by the Contractor from other parties have been duly paid, whereupon the Engineer shall give his final certificate accordingly; and such remaining ten per cent., or the balance payable to the Contractor as found by the Engineer, shall be paid to him by the Commission within forty days after the granting of such final certificate; and it is hereby declared that the written certificate of the Engineer certifying to the final completion of this contract as aforesaid shall be a condition precedent to the right of the Contractor to receive or to be paid the said remaining ten per cent. or the said balance or any part thereof.

5. The decision of the engineer as to whether ties conform to and are delivered in accordance with the terms of this contract shall be final. Culled ties must be promptly removed from the railway right of way unless arrangements are made for their purchase by the Commission at a reduced rate.

6. If the Contractor shall become bankrupt or insolvent or shall make an assignment for the benefit of his creditors, or shall compound with his creditors, or propose any composition to his creditors for the settlement of his debts, or shall attempt to transfer, sub-let or assign this contract or any part thereof without the consent in writing of the Engineer, or if by the report of the Engineer it shall appear that the rate of progress of the said work is not in the opinion of the other parties, and shall not directly or indirectly contract for ties for said work Engineer such as to insure the completion of same within the time herein prescribed, or within such additional time as may have been granted by the Engineer as aforesaid, or in case no additional time has been granted, and the said works are not completed within the time limited, or in case of additional time being granted as aforesaid, then if the same are not completed within such additional time, or if the Contractor shall, in the opinion of the Engineer, who shall be the sole and absolute judge in that behalf, persist in any course violating any of the provisions of this contract, the Commission shall have the power and right, at its discretion, without previous notice and without process of law, to take the work or any part thereof out of the hands of the Contractor, and either re-let the same to any other person or persons without previous advertisement, or to employ workmen, and to provide material, tools and other necessary things at the expense of the Contractor, or to take such other steps as the said Commission may consider necessary in order to secure the completion of the said work; and in any such case the Contractor shall have no claim to any further pay-



ment in respect of work performed, but all things done and means employed under this clause by the Commission shall be as binding on the Contractor as if the things done and means employed had been done and employed by him under this contract; but the Contractor shall nevertheless remain liable for all loss and damages which may be suffered by the Commission by reason of the non-completion by the Contractor of the work, or by reason of any of the matters aforesaid, which damages shall be deemed to include all salaries or wages which shall be payable to the person or persons superintending the work on behalf of the Commission, and no action or claim shall be raised or made by the Contractor by reason or on account of the ultimate cost of the work so taken over proving greater than in the opinion of the Contractor it should have been, and the amount of all such loss shall be computed and ascertained by the Engineer, whose certificate certifying to the amount thereof shall be final and binding upon all parties, but notwithstanding any of the matters aforesaid the Contractor shall receive credit for all amounts owing to him for the part of the work which he shall have performed, subject, however, to the right of the Commission to deduct therefrom all such loss and damage as aforesaid so certified to by the Engineer.

7. Should the Contractor not complete the work, notwithstanding any delay or hindrance by the Commission, to the satisfaction of the Engineer on or before the dates aforesaid, or on any substituted dates as above provided, he shall at the option of the Commission in lieu of liability to pay damages and expenses as provided in the last preceding clause, pay to the Commission by way of liquidated and ascertained damages the sum of twenty dollars for each day which may elapse after the respective dates or substituted dates as aforesaid before the whole work shall be completely executed to the satisfaction of the Engineer.

8. The Contractor shall not in any way, without the consent in writing of the Engineer first had and obtained, dispose of, assign, sub-let or re-let the work embraced in this contract or any portion thereof.

9. The said bond of the said Contractor and the said William McKenzie shall be construed and read as if the said bond were conditioned in addition to the condition therein set forth upon the said Contractor, his heirs, executors, administrators or assigns, well and faithfully doing all the work and furnishing all the materials and observing and performing all the matters and things required to be done, furnished, observed and performed by him or them under this contract, within the times, in the manner and according to the true intent and meaning of this contract, and the said sum of fifteen hundred dollars paid by the said Edgar Seymour Reade shall be and continue security to the said Commission for the due and faithful observance and performance by the Contractor of this contract, as well as of the said contract of the seventh day of November, one thousand nine hundred and two, to which the sureties severally agree, as testified by the execution by them of these presents.

10. And the Commission in consideration of the premises hereby covenants with the Contractor that the Contractor from time to time and in all respects having fulfilled the covenants and agreements herein contained and on the Contractor's part intended to be fulfilled, will be paid on the terms aforesaid for each and every tie delivered and accepted as above as follows:— For each tie cut on Crown Lands upon which the Contractor or any Sub-Contractor or any person from whom the Contractor or Sub-Contractor shall purchase the same shall have paid Government dues thereon, the sum of twenty-seven cents, and for each tie upon which Government dues shall not

have been paid by the Contractor or any Sub-Contractor or other person as aforesaid, the sum of twenty-five cents.

11. The word "Contractor" wherever it appears in this Contract shall be held to mean and include the Contractor his heirs, executors, and administrators; and the word "Engineer" shall mean the Chief Engineer for the time being appointed by the Commission and having control over the work of construction of the line of railway.

In Witness Whereof this Agreement has been duly signed, sealed and executed by the said Contractor and the said Engineer, and both witnessed by the said Commission under its Corporate seal and under the hands of its Chairman and Secretary.

Witness, Sealed and Delivered in the presence of

(Sgd.) E. S. SENKLER, (Sgd.) THOS. WALLACE (SEAL.)

(Sgd.) W. McKENZIE, (SEAL.) as to the signatures of Thos. Wallace and W. McKenzie.

(Sgd.) D. E. THOMSON, as to execution of Edgar S. Reade.

(Sgd.) A. E. AMES, as to signature of A. E. Ames. Chairman. (SEAL.)

(Sgd.) E. RUICKBIE, (Sgd.) P. E. RYAN, as to signature of P. E. Ryan. Secretary.

Ties were called for and issued by the Commission on September 1st 1903 and to be delivered on or before the 1st day of October 1903 at one hundred and twelfth mile, at such points as would be approved by the Tie Inspector as follows:

Name.	Cedar.	Tamarac.	Hemlock.	Jack-Pine.
Wm. Leitch.....	21 cents.	24 cents.	21 cents.	24 cents.
Thos. A. Jones.....	33 "	33 "	27 "	31 "
J. N. Palmer.....				
A. M. Macdonald.....	33 "	33 "	27 "	31 "
Louis Herman.....	24 1/4 "	25 "	25 "	25 "
Hubert A. McNeil.....	25 1/4 "	25 1/4 "	25 1/4 "	25 1/4 "
John Armstrong.....	24 1/4 "	24 1/4 "	24 1/4 "	24 1/4 "
H. Maclean.....	25 "	24 "	25 "	24 "
Thomas Wallace.....	14 "	23 "	15 "	23 "

The tender of Thomas Wallace was the lowest, but it was inferred from his tender that he purposed furnishing only Tamarack and Jack-pine ties, and the Commission not desiring a large quantity of Jack-pine intimated to Mr. Wallace that they were disposed to accept his tender provided he would agree to restrict the amount of Jack-pine which he would furnish to 10 p.c. of the whole quantity. There seemed to be a doubt as to whether or not Mr. Wallace intended that his tender should cover the cost of delivering the ties along that portion of the right of way which ran through the country under



timber license at the Northern end of the line, and in order that Mr. Wallace might have an opportunity of speaking as to this he was invited to meet a Committee. At this meeting Mr. Wallace stated that he had not figured on delivering the ties along this section of the road where they could not be cut, nor did he understand that the privilege of delivering the ties below the seventy-second mile would be withheld from him provided he agreed to furnish not more than 10 p. c. Jack-pine. The desire of the Commission that the ties should be delivered between the seventy-second and one hundred and twelfth miles was explained to Mr. Wallace, and the contract was awarded to him on the basis of delivery between the seventy-second and one hundred and twelfth miles wherever directed by the Tie Inspector, but not along that portion of the road which was under timber license, and on the further understanding that he was to furnish in Jack-pine not more than 10 p.c. of the total quantity of ties required. The prices were as follows:

For Cedar Ties .....	14 cents
For Tamarack Ties .....	24 "
For Hemlock Ties .....	15 "
Jack-pine Ties .....	21 "

**MEMORANDUM OF AGREEMENT** made (in duplicate) this 9th day of October, in the year of our Lord one thousand nine hundred and three.

Between *Thomas Wallace*, of the Town of North Bay, in the District of Nipissing, Merchant, hereinafter called "The Contractor," of the first part: and *The Temiskaming and Northern Ontario Railway Commission*, hereinafter called "The Commission," of the second part;

*Witnesseth:* That in consideration of the mutual covenants and agreements hereinafter contained the parties hereby agree as follows:

1. That the Contractor will deliver to the Commission at such points between the seventy-second and one hundred and twelfth mile of the right of way of the Commission as may from time to time be directed and approved by the Engineer or his agent duly authorized in that behalf (save and except that the Contractor shall not be bound to make delivery at any point on the right of way which runs through lands now subject to Government Timber License) one hundred and thirty-five thousand railway ties made from sound timber of good merchantable quality and in strict compliance in all respects with the specifications hereto annexed, which specifications are hereby made a part of this contract, it being however agreed that should there in any respect be any discrepancy between the said specifications and these presents then the terms of these presents shall govern, and it being further expressly agreed that the Contractor shall not be entitled to supply, nor shall the Engineer or Commission be bound to accept more than ten per cent. of the whole quantity of said ties made from jack-pine, said ties to be delivered and piled completely ready for inspection as follows:—At least sixty-five thousand on or before the first day of March, one thousand nine hundred and four: at least forty thousand additional on or before the fifteenth day of April, one thousand nine hundred and four, and the balance, thirty thousand, on or before the first day of June, one thousand nine hundred and four, or on or before such other dates as on written application of the Contractor for an extension of time the Engineer may in writing substitute for said dates or any of them, time being agreed to be material and of the essence of this contract.

2. That the Contractor will pay in cash for all ties purchased by him from other parties, and shall not directly or indirectly contract for ties for said work the price of which shall be payable either wholly or partly in goods or otherwise than in actual cash.

3. That the Contractor will furnish satisfactory evidence to the Engineer from time to time as requested by the Engineer of his having complied with the provisions of the last preceding clause hereof and as to the land upon which all ties delivered from time to time have been cut, and that the Contractor or other party cutting same had the legal right to cut such ties and dispose of them and that the same are free from all liens and attachments, and until such evidence to the satisfaction of the Engineer is furnished, and until ties from time to time are actually accepted and marked by the Engineer or by his agent in that behalf as aforesaid, the same shall be at the risk of the Contractor.

4. The decision of the Engineer or of his agent in that behalf as to whether the ties conform to and are delivered in accordance with the terms of this contract shall be final and conclusive. Culled ties must be promptly removed from the railway right of way unless same shall be accepted by the Engineer under clause five of the said specifications, in which case they shall be paid for at half price.

5. Government dues, if any, shall be paid by the Commission.

6. If the Contractor shall become bankrupt or insolvent or shall make an assignment for the benefit of his creditors, or shall compound with his creditors or propose any composition to his creditors for the settlement of his debts, or shall attempt to transfer, sub-let or assign this contract or any part thereof without the consent in writing of the Engineer, or if by the report of such Engineer it shall appear that the rate of progress of the said work in the opinion of the Engineer is not such as to ensure the completion of same within the time herein prescribed or within such additional time as may have been granted by the Engineer as aforesaid, or in case no additional time has been granted and the said work has not been completed within the time limited, or in case of additional time being granted as aforesaid, then if the same has not been completed within such additional time, or if the Contractor shall in the opinion of the Engineer (who shall be the sole and absolute judge in that behalf) persist in any course violating the provisions of this contract, the Commission shall have the power and right at its discretion without previous notice and without process of law to take the work or any part thereof out of the hands of the Contractor, and either re-let the same to any other person or persons with or without previous advertisement, or to employ workmen and provide material, tools and other necessary things at the expense of the Contractor, or to take such other steps as the said Commission may consider necessary in order to secure the completion of the said work, and in any such case the Contractor shall have no claim to any further payment in respect of work performed, but all things done and the means employed under this clause by the Commission shall be as binding on the Contractor as if the things done and the means employed had been done and employed by him under this contract; but the Contractor shall nevertheless remain liable for all loss and damages which may be suffered by the Commission by reason of the non-completion by the Contractor of the work, or by reason of any of the matters aforesaid, which damages shall be deemed to include all salaries or wages which shall be payable to the person or persons superintending the work on behalf of the Commission, and no action or claim shall be raised or made by the Contractor by reason or on account of the ultimate cost of the work so taken over proving greater than in the opinion of the Contractor it should be, and the amount of all such loss shall be computed and ascertained by the Engineer, whose certificate certifying to the amount thereof shall be final and binding upon all parties; but notwithstanding any of the matters



shall the Contractor shall receive credit for all amounts owing to him for the part of the work which he shall have performed, subject, however, to the right of the Commission to deduct therefrom all such losses and damages as above and so certified by the Engineer.

7. Cash payments equal to about ninety per cent. of the value of the ties so delivered and accepted shall be made to the Contractor monthly on the written certificate of the Engineer that such ties have been so delivered and accepted and such evidence furnished as aforesaid, and the said certificate shall be a condition precedent to the right of the Contractor to be paid the said ninety per cent. or any part thereof. The remaining ten per cent. shall be retained until the final completion of the whole work to the satisfaction of the Engineer and until the Engineer shall be satisfied that all wages of all workmen, labourers and servants of the said Contractor and of all Sub-Contractors under him, as well as the price of all ties purchased by the Contractor from other parties have been duly paid, whereupon the Engineer shall give his final certificate accordingly, and such remaining ten per cent., or the balance payable to the Contractor as found by the Engineer shall be paid to him by the Commission within forty days after the granting of such final certificate, and it is hereby declared that the written certificate of the Engineer certifying to the final completion of this contract as aforesaid shall be a condition precedent to the right of the Contractor to receive or to be paid the said remaining ten per cent. or any part thereof.

8. Should the Contractor not complete the work, notwithstanding any notice or hindrance by the Commission, to the satisfaction of the Engineer on or before the dates aforesaid, or any substituted dates as above provided, he shall, at the instance of the Commission, in lieu of liability to pay damages and expenses as provided in the last preceding clause, pay to the Commission by way of liquidated damages the sum of twenty dollars for each day which has elapsed after the respective dates or substituted dates as aforesaid before the whole work shall be completely executed to the satisfaction of the Engineer.

9. The Contractor shall not in any way, without the consent in writing of the Engineer first having been obtained, dispose of, assign, sub-let or re-let the work embraced in this contract or any portion thereof.

10. The Commission, in consideration of the premises, hereby covenants with the Contractor that the Contractor from time to time, and in all respects having fulfilled the covenants and agreements herein contained and on the Contractor's part intended to be fulfilled, will be paid on the terms aforesaid for each and every tie delivered and accepted as above as follows: For Cedar ties, fourteen cents; for Tamarack ties, twenty-four cents; for Hemlock ties, fifteen cents, and for Jack-pine ties, twenty-one cents.

11. The word "Contractor" wherever it appears in this contract shall be held to mean and include the Contractor, his heirs, executors and administrators; and the word "Engineer" shall mean the Chief Engineer for the time being appointed by the Commission and having control of the work of construction of the said line of railway.

In Witness Whereof this Agreement has been duly signed, sealed and executed by the said Contractor, and duly executed by the said Commission under its Corporate Seal and under the hands of its Chairman and Secretary.

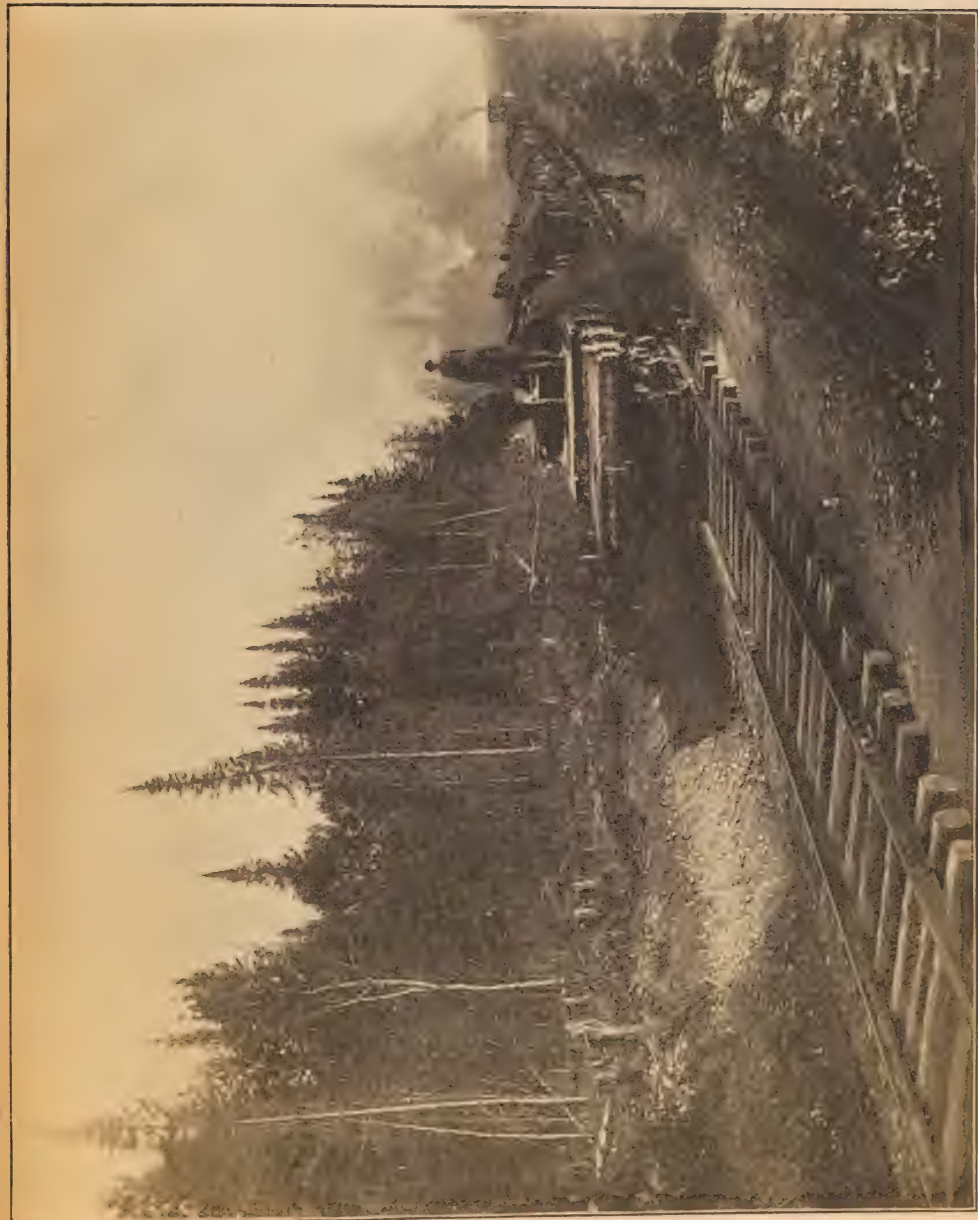
SIGNED, SEALED AND (Signed) THOS. WALLACE. (SEAL.)

DELIVERED  
in the presence of  
(Signed.)

THE TEMISKAMING & NORTHERN  
ONTARIO RAILWAY COMMISSION. (SEAL.)

IRENE I. DICK.

" A. E. AMES, Chairman.  
" P. E. RYAN, Secretary.



Unloading Ballast, T. & N. O. Ry.

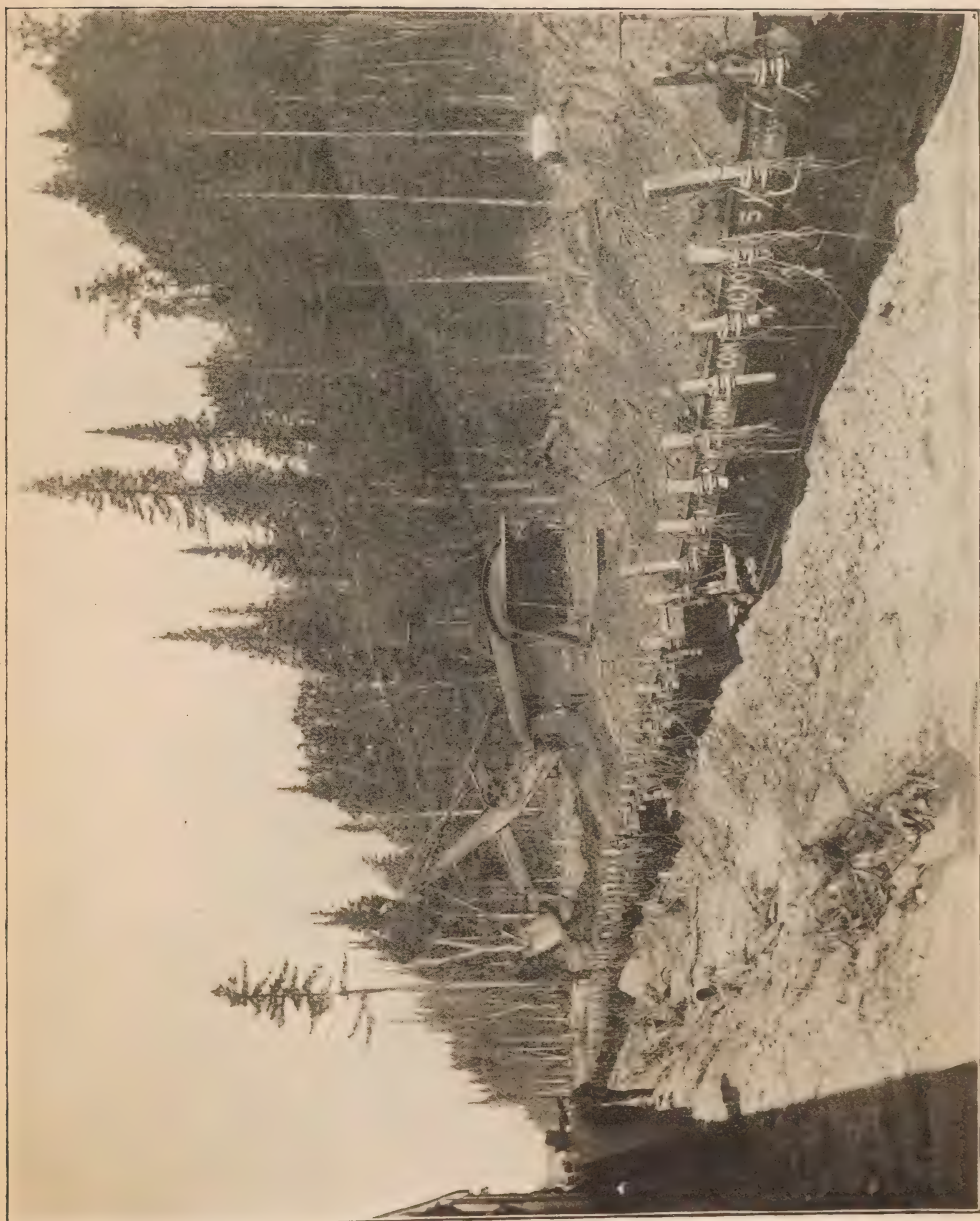






The Waboose or Rabbit Rock, Rabbit Lake, T. & N. O. Ry.





Steam Shovel Loading Ballast Train, T. & N. O. Ry.







Rock Cut, T. & N. O. Ry.





Montreal River, Where the Railway First Touches it.







Saw Mill at 14th Mile, T. & N. O. Ry.



## FIRE RANGING.

A system of fire ranging along the line of construction was adopted by the Commission early in the Spring of 1903, and was put into full force in the month of May. The features of the system were the division of the distance into sections of six miles each, in charge of a Fire Ranger, authorized to call upon all the men on his beat engaged in construction work to assist him in quenching any fires. The Fire Rangers were under the direction and authority of the Crown Lands Department, which appointed them. The Chief Fire Ranger and the Chief Engineer of the Commission worked together in the supervision of the system. Particulars of how the system worked out will be found in the second Annual Report of the Chief Engineer, which appears elsewhere in this report.

## TELEGRAPH MATERIAL.

The Chief Engineer called for and received the following quotations for the telegraph material named below:—

*Ahearn & Soper, Ottawa.* 55 miles No. 8 B.W.G. galvanized telegraph wire to C. P. R. specification, \$3.87 per 100 lbs., f.o.b. Port of Montreal, subject to prompt acceptance. DP.DG. insulators, \$45 per 1,000. 2 in. oak side blocks, painted, standard, to sample \$19.50 per 1,000. 2 in. Locust side blocks, unpainted, standard, to sample, \$37 per 1,000, all f.o.b., Ottawa.

*The American Steel & Wire Company, Montreal.* Telegraph wire, \$2.80 per 100 lbs., carload lots. Telegraph wire, \$2.85 for less than carload lots, f.o.b. cars, North Bay, in bond. This with duty added brought the price for less than carload lots to \$3.41 per 100 lbs.

*James Cooper, Montreal.* Telegraph wire \$3.30 per 100 lbs., f.o.b., North Bay, duty paid. D.P. glass insulators, \$3.25 per 100, f.o.b., North Bay. Oak side blocks, \$2.16 per 100, f.o.b., North Bay.

*The Diamond Glass Company, Limited, Montreal.* 2,100 glass insulators, similar to those furnished C. P. R., \$3.47 per 100, f.o.b., North Bay.

The order for all the telegraph material indicated above was placed with James Cooper, of Montreal, the lowest tenderer.

## REPORT OF MEDICAL DOCTOR.

North Bay, Jan. 13, '04.

P. E. RYAN, Esq.,

*Secretary-Treasurer T. & N. O. Railway Commission,  
Toronto.*

Sir,—I beg to submit my report of medical attendance on the employees from Nov. 1, '02, to Dec. 31, '03.

The general plan of attendance was to supply each camp with a quantity of medicines such as were required for ordinary use for minor ailments, and a supply of bandages, lint and antiseptic dressings for use in case of minor injuries and first aids to the severely wounded. Besides this one of my assistants visited all the camps once a week when it was possible to do so, and attended to all special calls with the least possible delay.

With the exception of an outbreak of small-pox on two occasions and of typhoid fever being prevalent last fall on the north end of the work, we had



no diseases of a contagious or epidemic nature. There were altogether 22 cases of small-pox and no deaths. Good, comfortable isolation camps were furnished by the contractors, who also furnished nurses and provisions for these cases.

During the latter part of the summer there were a large number of cases of scurvy, exclusively among the Italian laborers who boarded themselves. No deaths.

Considering the number of men employed and the hazardous nature of the work there were comparatively few accidents with fatal results, the total number being four killed instantly and two died subsequently.

The total number of cases of all kinds treated in North Bay Hospital was seventy-one, the period of residence in hospital varying from one day to four months. The nature of cases and results were as follows:

Typhoid Fever.....	9	No. deaths.....	1
Rheumatism .....	8	" .....	0
Pneumonia .....	2	" .....	0
Consumption .....	1	Discharged.	
Blood Poisoning .....	3	No. deaths.....	1
Alcoholism .....	2	" .....	0
Influenza .....	4	" .....	0
Bronchitis .....	1	" .....	0
Acute Nephritis .....	1	" .....	0
Chronic Nephritis .....	1	" .....	left Hospital.
Tonsilitis.....	1	" .....	0
Sunstroke .....	1	" .....	0
Intermittent Fever .....	3	" .....	0
Scurvey .....	1	" .....	0
Pleurisy .....	1	" .....	0
Nephritic Abscess.....	2	" .....	0
Ulcer on leg .....	2	" .....	0

### Injured:—

1 Head cut and spine injured by falling tree .....	Partly recovered. Went to Toronto.
1 Side injured by explosion of tin pail in which there was some nitro-glycerine.....	Recovered.
1 Both hands severely lacerated by explosion .....	"
1 Severely injured in head and chest by explosion .....	Died in few hours.
1 Sprained ankle .....	Recovered.
1 Fractured leg, fell off wagon .....	"
1 Fractured leg, dynamite explosion .....	"
1 Eye injured, dynamite explosion .....	"
1 Arm broken and lacerated, both eyes destroyed, arm ampu- tated, dynamite explosion .....	Died.
1 Crushed toe .....	Recovered.
1 Side injured, slight .....	"
1 Middle finger amputated, account crushed .....	"
1 Eyebrow cut by a knife in a fight .....	"
1 Foot burned .....	"
1 Thigh fractured and leg lacerated, dynamite explosion.....	In hospital.
1 Face and hand badly burned.....	"
1 Frozen foot .....	"
1 Side injured by explosion of tin pail containing nitro- glycerine .....	Recovered.
1 Foot and ankle crushed by rock falling on it, amputated.....	"
1 Elbow cut by an axe .....	"
1 Finger amputated, account crushed .....	"
1 Knee burned .....	"
1 Knee cut by an axe, suppuration of joint, operation.....	"
1 Injured knee .....	"
1 Foot slightly injured .....	"
1 Fractured arm, thrown off horse.....	"

At Boyce Lake Hospital, 24 patients were admitted:—

Typhoid .....	3	Recovered .....	3
Rheumatism .....	5	" .....	5
Pneumonia.....	3	" .....	3
Scurvey .....	6	" .....	6
Tuberculosis .....	2	" .....	1
Influenza .....	1	" .....	1
Bilious fever .....	1	" .....	1

## Injured:—

1 Left hand and eyes injured by dynamite explosion. Part of little finger and thumb amputated	Recovered
1 Fracture of bones of forearm, struck with a club	"
1 Right hand injured, little finger and part of bone removed	"

## At Moose Lake Hospital, 17 patients were admitted:—

Abcess	1	"	1
Cystitis	1	"	1
Neuralgia	1	"	1
Malingers	3	"	3
Stricture	1	"	1
Tenoritis	1	"	1

## Injured:—

1 Contusion of fingers	Recovered.
1 Left hand—thumb blown off, flesh torn off other fingers, wrist and back of hand burned. Recovered use of hand fairly well	
Right hand—wound extended almost completely around wrist; bones of arm fractured in several places. Refused to have operation. Went to Montreal and had arm amputated	"
1 Knee injured slightly	"
1 Contusion of leg	"
1 Contusion of ankle	"
1 Both eyes destroyed and face burned, dynamite explosion. Went to Montreal	"
1 One eye destroyed and face burned, dynamite explosion. Went to Montreal. Recovered sight in one eye	"
1 Both hands injured, right little finger torn and bones fractured, left index finger cut and bone broken, dynamite explosion.	"
1 Knee cut by an axe. Removed to North Bay Hospital	"

As this report practically covers the work done during the grading and track laying on the first sixty miles of the road, I shall send it in without waiting for Dr. Smith's report from Haileybury. I wrote him as soon as I received your request for report, but as the road was blocked for a week or ten days I expect the letters were delayed in transit. I shall forward his report as soon as it comes.

Yours sincerely,

(Sgd.) A. McMURCHY.

## CHIEF ENGINEER'S SECOND ANNUAL REPORT.

North Bay, Ont., January 2nd, 1904.

P. E. RYAN, Esq.,  
Secretary-Treasurer, Toronto.

Dear Sir,—I herewith beg to present my Annual Report for the year 1903:—

## SURVEY.

In presenting my Annual Report for the year ending December 31st, 1903, I beg to state that at the end of the year 1902 the surveys of this railway were finally completed to the 58th mile (Redwater Lake) with a first location to the 72nd mile (Temagami Lake) and a preliminary to the 112th mile, where the line reached Lake Temiskaming. The located part of the line between the 50th mile and the 72nd mile, most of which ran along the West Shore of Rabbit Lake, shewed a profile extremely heavy in quantities with a heavy percentage of solid rock, heavy in gradients and with a sharp

continuous curvature. With the object of reducing this a careful exploration of this portion of the country was commenced in January, 1903, a new line being run some miles inland from Rabbit Lake with good results in every respect. The old line was abandoned and the new line located and revised, which resulted in a big saving in quantities, reduction of grades and better alignment as well as being one mile shorter than the old location. In January, 1903, another party was sent out to the extreme Northern end at New Liskeard to locate South. Both these locating parties were kept in the field, the one working North, the other South, until they met in the month of July. In making this Survey from the 50th mile to the 112th it was necessary to tie three fixed points together by the shortest and best possible route. The first point was Temagami Lake at the 72nd mile where the line touches it at the North-east arm. It was considered advisable to touch this lake with the line of railway for the reason of its being already considerably well known as a resort for tourists, and with the very great prospects of enlarging on this with the advent of the line, as well as bringing a large area of territory in touch with the railway. The deviation necessary to touch this lake from the general direction was also very slight. The second fixed point is a point where the Montreal River could be reached and crossed. This river lies in a valley considerably lower in elevation than the country immediately south of it, and in places were ridges of hills which had to be got through. It was found after careful exploration that the best possible crossing was at the outlet of Bay Lake, an expansion of the Montreal River as well as a comparatively easy descent to it. In fact this was found to be the only point at which the river could be reached from the south and crossed. It is also a very desirable point on the river to tap from the standpoint of trade for the railway, for with a dam at the outlet of Bay Lake where the railway crosses the river is made navigable to small steamers for forty miles. Between this crossing, which is at the 94th mile on the finally located line of railway and Temagami Lake at the 72nd mile, two lines were tried, one by Mountain Lake to the West, the other by Rib Lake to the East. The Mountain Lake route was found to be impracticable and the Rib Lake route was then adopted. The third fixed point was some point on Lake Temiskaming. In order to reach this lake, which lies some four hundred feet lower than the country which the railway had reached to the south of it, it was necessary to bring the line on to the slope to the lake as soon as possible. In order to utilize this side hill to grade down to the lake on, at the 101st mile and about four miles south of a point where the line of railway enters the southern boundary of the Township of Bucke, this slope was reached and eleven miles of the side hill used to give as gradual and easy a grade as possible. This also was found to be the only possible route to bring the railway to the lake. A profile of this grade, as well as the grade down to the Montreal River from the south and to Temagami Lake from the south is shewn attached to this Report, these being the ruling gradients on the upper portion of the line.

The maximum grade which it was found necessary to use on the first thirty-two miles of 1.25 per cent. rising north, and 1.00 per cent. rising south, was reduced on the balance of eighty miles to a 1.00 per cent. rising north, and a .75 per cent. rising south, with compensation for all curvatures of .05 per cent. per degree, with advantage taken at some points of introducing steeper momentum grades, the maximum curve being a six degree and easement on all curves over a three degree. The steeper grades being bunched on the first thirty-two miles, where extra power might be used on this portion of the road. This reduction in the grades brought about an increase in the quantities and greater first cost to the road than was first expected.



Especially was this the case with the grades immediately south of Temagami Lake and Montreal River, where the quantities might have been reduced thirty per cent. by the introduction of the steeper grade, but it was considered advisable by the Commission to adopt the higher standard of road in the way of this reduction of these ruling gradients and take the increase in first cost, when it was considered the great yearly saving in the cost of operation for all time to come on these reduced grades would amount to a sum many times more than would pay interest on the increased first cost. These three grades are the ruling gradients on the northern eighty miles, and particular attention and careful revision was given them before allowing grading to proceed at these points. Indeed, every effort has been made in this broken line of country which the line of railway passes through in its entire distance to get the best possible alignment and grade with a minimum of cost, and to attain this end necessitated much expense in exploration and surveys in trying alternative routes, making comparisons of same, and revising the adopted location until it was thought the best possible was obtained. To do this it was also necessary to keep the surveys well ahead of the construction or delay the construction until this had been obtained; but by the wisdom of the Minister of Public Works, and afterwards followed up by the Commission, these surveys were well advanced before any contract was let, and with the start thus obtained were kept well ahead of construction, so that there was practically no delay to the Contractor on this score.

#### TIMBER.

The timber along the entire line of this railway, and miles on each side, is heavy and of great value.

The timber along the line of railway from the southern end to the 103rd mile is a heavy green forest composed of white and red pine, spruce, black, yellow and white birch, cedar, hemlock, balsam and maple, in places all growing together. At the 103rd mile the railway enters the Temiskaming clay belt and the pine becomes scarcer, the timber being principally spruce, balsam, cedar and poplar. From the 48th mile to the 80th mile the railway passes through the Temagami Forest Reserve, where great quantities of pine are to be seen from the railway. On account of the great value of the timber along the line of this railway and for miles on both sides of it it was of the utmost necessity that some extra precaution should be used to prevent the spread of fire off the right of way of the railway. A staff of fire-rangers was spread along the line of railway under construction in the dry season, each ranger having a beat of six miles to cover twice every day. Power was given to each, through the Engineer and contract between the Contractor and the Commission in case of a dangerous fire to call off all the Contractor's men on that particular ranger's beat to fight the fire, the time of the men so employed being paid at the regular schedule of wages. The Crown Lands Department agreed to work conjointly with the Commission in this matter and to pay one-half the expense thereof. The system was found to work admirably and several serious looking fires were checked by this means, notably near the 37th mile in the month of June, when one hundred men fought fire for three days, and another near the 26th mile.

Some of this pine timber thus protected was afterwards sold at public auction by the Government at a handsome figure, the advent of the railway through this territory making it possible to get this timber out to market. In clearing the right of way at places considerable quantities of the pine timber had to be cut. It was carefully skidded and sold by tender. Other timber on the right of way was made into telegraph poles, ties and fence posts.



### MINERALS.

When the surveys of the railway were commenced it was known that there existed a mineral belt of some considerable extent near Temagami Lake, principally of iron ore. With the railway passing through the belt no doubt development work will commence which was practically impossible before. During the construction of the railway near the 103rd mile mineral deposits were discovered which proved to be nickel ore. The Provincial expert reports these finds of great value. There appears to be little doubt that the northern portion of the railway passes through an exceedingly valuable mineral territory.

### AGRICULTURAL LANDS.

The country through which the railway passes from its southern end to where it enters the Temiskaming clay belt at the 103rd miles is more or less broken, with rocky ridges and numbers of lakes of all sizes scattered almost everywhere along the route. There are patches of agricultural land in places, but the country is principally valuable for its magnificent growth of timber, its minerals and the abundance of game and fish which ought to make it a splendid resort for tourists. From the 103rd mile to the 112th the railway passes through a clay loam territory which is the southern end of the Temiskaming clay belt, and is proven to be as good agricultural land as perhaps exists anywhere in the Province.

### TOWN SITES.

Town sites have been laid out and reserved by the Crown Lands Department along the railway at the 38th mile in the Township of Osborne, where there is a block of flat land capable of being utilized for agricultural purposes, the 72nd mile, Temagami Lake, and the 94th mile, the crossing of the Montreal River and foot of Bay Lake. Sufficient land has been reserved for the railway at these different points, also for station grounds, yard room, etc.

### CONSTRUCTION.

The grading, which was well under way at the end of 1902, has made considerable progress, and at the end of 1903 there is a total of seventy-six miles completed, twelve miles of this being from the Northern end South. This leaves a balance of thirty-six miles to be finished this winter and will be completed early next summer. It was found that a great many of the cuttings, which from the surface looked like earth and classified material turned out to be solid bed rock, but with a careful revision at all points these quantities were reduced to a minimum. Temporary structures are thrown up where heavy fills are encountered and where the cutting is insufficient to make the fill these structures are being utilized to make the fill with the train from the ballast pit. On encountering more of this rock than was first anticipated and the expense of handling any more of this material than was absolutely necessary, it was also necessary to put in more of these temporary structures than was expected, for the reason that it is much cheaper to put in these structures and fill with train than borrow bed rock. In stream crossings in some cases permanent structures and steel plate girders have been used, and at a number of other crossings permanent wooden structures have been used.

Sidings have been graded about every ten miles apart and two thousand feet in length, which will be sufficient to accommodate about fifty cars with engine, and which should be sufficient for many years to come; extra land has been taken up at each siding for station grounds, yard room, etc.

Track laying was commenced on the 15th of June and continued throughout the summer until the 57th mile was reached in the early part of December, where winter quarters were taken up and which will be the end of the steel till next summer. The rail used weighs eighty pounds per yard, thirty-three feet standard length, with a twenty-six inch four-hole angle-bar connection weighing forty-eight pounds per pair, and a seven-eighth inch cold rolled thread bolt. A nine-sixteenth by six-inch spike is also used and tie-plates placed on all curves of three degrees and over. Spring rail frogs and split-switches are being put down at all permanent sidings. The Contractor is using in connection with this track-laying one engine of about sixty tons and a track-laying machine.

Ballasting was commenced on the 6th of July with three engines of about sixty tons each, one Bucyrus steam shovel, a Barnhart plow and cable and seventy-five flat cars. By the 17th of November thirty-seven miles of ballasting was completed, when the severe frost stopped the work. The Contractor from that time on has turned the force on filling some temporary trestles, quite a number of them having been filled up to the end of the present year, making a solid road-bed.

A telegraph line has been erected as the track was laid and now is completed to the 57th mile. A cross-arm has been placed on each pole, making provision for a second wire when necessary. The pole is also notched to receive a second cross-arm when the service calls for more than two wires.

A woven-wire fence, known as the "Frost" fence, has been erected on the first nine miles and will be completed to the 18th mile next season, to a point where the railway enters the unlocated lands. This will be sufficient fencing at this end for some years to come. About eight miles of the Northern end will also require to be fenced.

The contract called for the completion of sixty miles by the end of 1903, and the balance by the end of 1904. From the above it will be seen that the grading made quite satisfactory progress, being sixteen miles more than was called for. The track-laying, as already stated, reached the 57th mile. The ballasting has not made sufficient progress, and after taking this matter up with the Contractor and pointing out to him the necessity of putting on a bigger force and more plant I have required him to double his force next season, which will mean in place of one steam-shovel and ballast-plow he will have two, and in place of four engines and seventy-five flat cars, there will be eight engines and one hundred and fifty flat cars. Ballasting will also commence six weeks earlier next season on account of everything being in readiness to receive it. If this programme is carried out the road ought to be completed by the end of 1904 and ready for operation.

Every effort has been made in this rough country to bring the ruling gradients down to a minimum, as almost any other error than an excessive ruling gradient can be corrected in time, curves can be flattened, short grades lifted, wooden structures replaced when the life of the timber is reached, but the grades are the life or death of a road that has or expects to have any traffic beyond a meagre minimum. In places wooden structures have been used which will last approximately fifteen years, when they can be replaced by masonry structures if it be then considered desirable to do so.

Yours truly, (Signed) W. B. RUSSEL.

## EXPLORATION NORTH OF NEW LISKEARD.

Early in August last, in view of the projection of the Grand Trunk Pacific Railway, the Commission considered the desirability of recommending to the Government a preliminary survey north of New Liskeard, so as to obtain such information as would be necessary to enable the Legislature to judge as to the advisability of extending the railway north to connect with the proposed Grand Trunk Pacific Railway. The Commission had no doubt as to the desirability of extending the road so as to make the connection referred to, as it was felt that such an extension would not only increase the earning capacity of the railway, but would be of material advantage to the Province as well, inasmuch as it would insure for the Province a share of the business of supplying the requirements of the West and of the construction of the Grand Trunk Pacific Railway. The recommendation was accordingly made, and the Commission were authorized by Order-in-Council to proceed with the survey.

Instructions were thereupon issued to the Chief Engineer to arrange for the organization of a small party, under the supervision of a competent Engineer, to be sent out to make a preliminary survey and exploration of the country, the nature of the soil and the forest products which the country obtain such information as was considered necessary to permit of the selection of the best route for an extension of the railway to connect with the proposed Grand Trunk Pacific Railway. Further instructions were given that the route selected should be one which would offer the best grades and curvatures available; and that a full report should be made as to the character of the contains. The report of the Chief Engineer of the result of the survey is given below:—

## SURVEY.

Acting under instructions to explore and survey for an extension of the railway now under construction north through the rich Temiskaming Clay Belt to a point at least as far as a probable junction with the proposed Grand Trunk Pacific Railway, a small party was sent out on the first of August to make a reconnaissance of a route up the Wabis River Valley, the Blanche River Valley, over the height of land and down the White Clay and Black Rivers; and also as a probable alternative route from the valley of the Wabis into the valley of Long Lake to the west and over the height of land towards Night Hawk Lake. The party returned about the middle of September, and from the information obtained it was decided to run a preliminary line through by the valley of the Blanche, as this route offered the easiest gradients and alignment. On the 20th of September a line was started at the terminus of the railway now under construction, and has been carried over the height of land and into the valley of the White Clay River. From the information thus obtained I am able to state that a line of railway can be located on this entire route with a maximum gradient of one-half of one per cent., or twenty-six feet per mile, rising both ways, and a maximum curve of four degrees. A location working to this standard is now in progress, and will be ready for construction in the early spring. The line for the first forty miles to near the foot of Round Lake will be comparatively easy to grade, being mostly light embankment of clay with an occasional ravine from twenty to one hundred feet deep to be crossed.

While this clay flat is at the mouth of the Blanche River from eight to ten feet above the level of the stream it rises gradually until thirty miles up the river it becomes forty to fifty feet above the river level, the river being navigable for small steamers for twenty-five miles from its mouth. From the river bank westerly the clay rises in terraces until it becomes one hun-



dred feet or more above the level of the branches of the Blanche River. Three of these ravines must be crossed by this proposed extension with three steel trestles about five hundred feet long. At the 45th mile and for eight or nine miles some rock is encountered, but north of this again the country becomes a clay flat. A flat summit is also reached at the 67th mile at an elevation of 1,010 feet above mean sea level. Although some rock is also encountered here, and in places sand hills, clay is again met within the valleys of the White Clay and Black Rivers. Although the grading is comparatively light in this proposed extension, an expensive part of the construction of the roadbed ready to receive the rails will be the stream crossings, which, as already stated, lie in deep ravines, having eaten deep into the clay, and in some places are of considerable width. The clearing of the right of way will also be heavy, for although the timber is smaller than the timber on the piece of railway now under construction, it is very thick.

#### AGRICULTURAL LANDS.

The one hundred and twelve miles of railway now under construction, as already stated, passes through a territory especially rich in timber, minerals and game, there being only patches of land fit for agricultural purposes, while this proposed extension of eighty or ninety miles passes through a fine clay loam and comparatively flat country of a width of from twelve to twenty miles, and at the northern end enters the great clay belt extending from the boundary line between Ontario and Quebec in a north-westerly direction across the Province some six hundred miles, and containing about 16,000,000 acres of fertile soil. The soil of the Temiskaming clay belt is already so well known for its fertility that it is hardly necessary to make any further comment upon it. It is rapidly becoming settled, cleared and put under crop, the settler having pushed his way as far north as twenty-five miles north of Liskeard, a town of 1,500 inhabitants and the present terminus of the railway. All of this territory lies south of the 49th parallel of latitude, the southern boundary of Manitoba. The winters are cold and steady, but shorter and milder than those of Manitoba, and are free from the sweeping winds of the prairie country. Near Round Lake, about forty miles north of Liskeard, rock shows up through the clay, in some places cliffs one hundred feet high with some small patches of sand, but the greater portion is clay. The summit between the waters of James Bay and of Lake Temiskaming is quite flat. When over the summit the line passes down the valleys of the White Clay and Black Rivers, branches of the Abbittibi River flowing into James Bay, which is also a flat country and of considerable width.

#### TIMBER.

The timber growing on the territory passed through by this proposed extension is not so conspicuous for its large growth as that through which the railway now under contract passes, but there is an almost unlimited quantity of pulpwood growing upon it as well as fine cedar and some pine. Tamarack is also very plentiful and will give an abundant supply of ties for the construction.

#### MINERALS.

The prospects of mining development in the broken country to the east of the Temiskaming clay belt, and which would be tributary to this extension, are great, one copper property some ten miles east of the 20th mile on this proposed extension having already been developed to a considerable extent. There are also to be found here slate and building stone of good quality and in considerable quantity. Many other economic minerals are found in this district.

(Sgd.) W. B. RUSSEL,  
*Chief Engineer.*



## TEMISKAMING AND NORTHERN ONTARIO RAILWAY COMMISSION.

	Per annum.
A. E. Ames, Chairman, Honorarium .....	\$1,000 00
Edward Gurney .....	1,000 00
R. W. Folger .....	1,000 00
M. J. O'Brien .....	1,000 00
F. E. Leonard .....	1,000 00
P. E. Ryan, Secretary-Treasurer .....	2,000 00
	Per month.
D. F. Thomson, Counsel, to Sept. 1st, 1903, \$300 per month; from Sept. 1st to Dec. 31st 1903 .....	200 00

### EMPLOYEES OF COMMISSION.

(Office of Secretary-Treasurer.)

H. W. Pearson, Accountant, to November 1st, 1903, \$80.00 per month; from Nov. 1st to December 31st, 1903 .....	100 00
Stenographer .....	33 33

Office of Chief Engineer.

W. Ryan, Secretary .....	90 00
Chas. Ferguson, Stenographer .....	35 00
Mrs. Fay, Caretaker .....	9 00

### ENGINEERS AND STAFFS ON CONSTRUCTION.

W. B. Russel, Chief Engineer (during construction) .....	250 00
E. E. Perrault, Chief Engineer (during construction) .....	150 00
F. E. Blanchet, Draughtsman .....	65 00
F. W. Pearson, Assistant Draughtsman .....	90 00
Alex. Allison, Steel Checker .....	40 00
S. W. Allison, Tie Inspector .....	75 00
Chas. Ridler, Teamster .....	40 00

#### Section 6.

C. L. Russel, Engineer-in-charge .....	100 00
G. A. Butler, Rodman .....	45 00
H. Carr, Axeman .....	40 00
James Higgerty, Timekeeper .....	40 00
H. C. Carr Axeman .....	40 00
P. Goulet, Cook .....	45 00
A. E. Trowse, Pile Inspector .....	40 00

#### Section 7.

C. W. Doherty, Engineer-in-charge .....	100 00
L. T. Martin, Rodman .....	45 00
H. H. Hogarth, Axeman .....	35 00
J. W. McDowell, Timekeeper .....	35 00
Leonard Dells, Cook .....	45 00

#### Section 8.

F. C. Jackson, Engineer-in-charge .....	100 00
A. A. Campbell, Rodman .....	45 00
W. J. Loudon, Timekeeper .....	40 00
M. Horn, Tapeman .....	35 00
Chas. Davies, Cook .....	45 00

### DIVISIONAL ENGINEER, LAND LINES, ETC.

Robert Laird, Divisional Engineer .....	150 00
W. R. Maher, Transitman .....	95 00
A. N. O'Kelly, Rodman .....	45 00
W. H. McDonell, Timber Inspector .....	45 00

### TRACK CENTRES, BALLAST PITS, ETC.

R. H. Harcourt, Engineer-in-charge .....	80 00
A. E. Carr, Rodman .....	45 00
Geo. Mitchell, Repairing wire, etc. ....	55 00
Jno. Tierney, Assisting Wireman (per day) .....	1 75

### Montreal River Section.

A. McGougan, Engineer-in-charge .....	100 00
L. W. Reade, Rodman .....	40 00
E. Sunstrum, Tapeman .....	40 00
J. W. Merrifield, Axeman .....	40 00
V. Fortier, Timekeeper .....	35 00
Fred. Hooper, Cook .....	45 00

Haileybury Section.

R. A. Galbraith, Divisional Engineer .....	\$150 00
R. Simpson, Assistant Engineer .....	75 00
A. Sunstrum, Rodman .....	50 00
A. McDougall, .....	50 00
T. Bangs, Inspector Concrete .....	75 00
A. Black, Force Report .....	40 00
James McKay, Axeman .....	40 00
T. Both, Axeman .....	40 00
A. King, Axeman .....	40 00
A. E. Whiteley, Cook.....	45 00

TELEGRAPH CONSTRUCTION (UNDER CARROLL).

T. D. Carroll, Superintendent .....	75 00
R. Alderson, Laborer (per day) .....	1 75
Peter James, Laborer (per day).....	1 75
A. Fredriken, Laborer (per day) .....	1 75
A. Harborman, Laborer (per day) .....	1 75
E. Erickson, Laborer (per day) .....	1 75
T. Bourke, Laborer (per day) .....	1 75
D. Rourke, Laborer, (per day) .....	1 75
F. O'Connor, Laborer (per day).....	1 75
Beit, Taylor Laborer (per day).....	1 75
D. Turner, Laborer (per day) .....	1 75
H. Metcalf, Laborer (per day) .....	1 75
E. Bourke, Laborer (per month) .....	35 00

TELEGRAPH CONSTRUCTION (UNDER J. JUDGE).

John Judge, Superintendent .....	100 00
M. Nelan, Laborer .....	35 00
Dan McDonald, Laborer.....	35 00
Simon Hays, Laborer .....	35 00
Alex. Urquhart, Laborer .....	35 00
Wesley Rancier, Laborer .....	35 00
Walter Fountain, Laborer .....	35 00
Fred. Gallagher, Laborer .....	35 00
Jas. Bourke, Laborer .....	35 00
M. McDonald, Laborer .....	35 00
Thomas McDonald, Laborer .....	1 75
H. McGillivray, Laborer .....	35 00
A. McNeil, Laborer .....	35 00
Martin Casey, Laborer .....	35 00
Peter James, Laborer .....	35 00
James Hickey, Laborer .....	35 00
Herb. Muleay, Laborer .....	35 00
M. Roche, Laborer .....	35 00
Thos. Pigeon, Cook .....	45 00

ENGINEERS AND STAFF ON EXPLORATION.

T. S. Hay, Engineer in charge .....	\$125 00
W. J. Clifford, Transit .....	100 00
J. M. Bourke, Leveller .....	75 00
Allan McDougall, Rodman .....	40 00
F. Kenning, Chainman .....	40 00
M. O'Malley, Chainman .....	40 00
Chas. Misner, Chainman .....	40 00
James McLean, Picketman .....	40 00
E. Moore, Axeman .....	40 00
H. Moore, Axeman .....	40 00
A. Willson, Axeman .....	40 00
Geo. Netherton, Axeman .....	40 00
A. Sawyer, Packer.....	45 00
J. Peters, Packer .....	40 00
E. F. Manes, Packer .....	40 00
L. Sojser, Cook .....	50 00
F. Pillsworth, Cook .....	50 00
C. Fraser, Cookee .....	40 00
Geo. Clarke, Cookee.....	40 00

ENGAGED IN REVISION OF LOCATION BETWEEN 50TH AND 112TH MILES, FROM  
JANUARY 1ST, TO JULY 31ST, 1903.

FIELD UNDER LAIRD.

Robert Laird, Engineer in charge .....	\$150 00
W. R. Maher, Transitman .....	95 00
F. W. Pearson, Leveller .....	60 00
A. N. O'Kelly, Topographer .....	45 00
A. Trowse, Rodman .....	40 00
James Higgerty, Chainman .....	40 00
J. P. Howe, Chainman .....	40 00
A. Wattie, Packer .....	40 00
McGee McSourley, Picketman .....	40 00
H. Dawson, Topographer's Rodman .....	40 00

J. Sunstrum, Axeman .....	40 00
R. Sunstrum, Axeman .....	40 00
S. DeBaire, Axeman .....	40 00
P. O'Connor, Packer .....	40 00
T. Petraut, Packer .....	40 00
Geo. Friday, Packer .....	40 00
Con. McGrath, Packer .....	40 00
G. Gilray, Cook .....	50 00

## FIELD UNDER T. S. HAY.

T. S. Hay, Engineer in charge .....	125 00
W. J. Clifford, Transitman .....	100 00
J. M. Bourke, Leveller .....	75 00
Alex. Sunstrum, Topographer .....	50 00
H. Scully, Rodman .....	40 00
P. A. Laing, Chainman .....	40 00
P. A. Laing, Chinaman .....	40 00
E. Scarlett, Assistant Topographer .....	40 00
H. Lamont, Picketman .....	40 00
Alex. King, Axeman .....	40 00
Thos. Walker, Axeman .....	40 00
Wm. Fiddler, Packer .....	40 00
Larry Devine, Packer .....	40 00
W. Merrifield, Axeman .....	40 00
Thos. Pigeon, Cook .....	50 00
Geo. Carr, Commissariat .....	50 00

STATEMENT No. 1.

Accounts contracted in 1902 but received and paid in 1903.

1902.

Item.	July.		August.		September.		October.		November.		December.		Total.
	Construc- tion.		Location.	Construc- tion.	Location.	Construc- tion.	Location.	Construc- tion.	Location.	Construc- tion.	Location.	Construc- tion.	
Sundries.....	\$4 80	\$16 51	\$12 00	\$39 07	.....	\$11 91	\$20 55	\$64 71	\$5 15	\$181 23	\$445 05	\$800 98	
Ties .....	.....	.....	.....	.....	.....	.....	.....	122 65	.....	.....	134 03	256 68	
Legal Expense s.....	90 00	.....	290 00	.....	189 27	.....	171 91	77 33	.....	.....	141 58	960 09	
Office Expenses .....	.....	.....	98 30	.....	.....	.....	8 40	49 65	.....	.....	112 70	269 06	
Supplies .....	4 00	.....	2 05	.....	.....	6 45	.....	49 04	.....	96 50	334 50	492 94	
Total.....	\$99 20	\$16 51	\$402 35	\$39 07	\$189 27	\$18 36	\$200 86	\$363 39	\$5 15	\$277 73	\$1,167 86	\$2,779 75	



## STATEMENT No. 2.

Distribution of Expenditure for year ending December 31st, 1903.

Item.	January.		February.		March.		April.		May.		June.	
	Location.	Con- struction.	Location.	Con- struction.	Location.	Con- struction.	Location.	Con- struction.	Location.	Con- struction.	Location.	Con- struction.
Sundries .....	478 64	778 23	362 65	612 28	125 75	335 74	167 60	810 64	496 18	1,416 78	28 65	1,515 07
Bank Interest .....		438 17		899 7		1,275 78		1,744 65		2,399 42		3,312 70
Pay Rolls .....	1,559	2 050 83	1,584 33	2,235 7	1,635 29	2,322 58	1,790 25	2,071 66	1,534 84	2,131 28	1,672 18	2,331 15
Engineers' Construction .....		75,139 83		87,448 97		90,290 71		127,576 44		114,702 39		98,973 50
Ties .....		3,684 43		6,931 93		14,507 00		8,573 83		9,615 07		6,839 20
Telegraph Line .....		192 90		204 01		1,285 57		932 31		1,498 29		802 25
Fencing .....		82 25		54 27								57 10
Legal Expenses .....		304 06		325 97		386 89		539 52		386 94		488 16
Office Expenses .....		419 34		424 64		406 2		645 30		710 17		365 67
General Expenses .....		820 16		781 52		752 68		687 97		846 83		724 18
Supplies .....	83 93	676 96	291 49	4,057 95	418 82	1,158 11	144 78	505 18	468 54	474 36	186 76	504 93
Right-of-Way .....						6,480 50		3,000 00				1,348 80
Rails and Fastenings .....								1,710 00		8,099 31		190,087 92
Switches and Fogs .....										28 50		3,444 7
Tracklaying .....												2,196 48
Ballasting .....												
Incidentals .....												
Rolling Stock .....												
Freight Shed .....												
Total .....	2,122 03	84,587 18	2,238 47	163,977 01	2,179 36	119,201 78	2,102 23	148,797 50	2,499 56	142,309 05	1,887 49	312,991 78

(Continued on page 48.)

STATEMENT No. 2.—Continued from page 47.

Distribution of Expenditure for year ending December 31st, 1903.

Item.	July.		August.		September.		October.		November.		December.		Total.
	Location.	Construction.	Construction.		Construction.		Construction.		Construction.		Construction.		
Sundries .....	132 30	1,416 20	1,274 20	1,225 98	640 60	292 81	640 60	292 81	640 60	292 81	640 60	12,208 50	
Bank Interest .....		4,160 45	4,937 87	6,186 72	7,350 11	4,639 11	7,350 11	4,639 11	7,350 11	4,639 11	7,350 11	38,412 98	
Pay Rolls .....	1,569 22	2,107 41	2,572 60	2,555 19	2,918 65	2,732 67	2,918 65	2,732 67	2,732 67	2,732 67	2,732 67	40,098 16	
Engineers' Construction .....		126,497 14	95,241 88	95,675 18	89,746 24	78,162 84	89,746 24	78,162 84	78,162 84	78,162 84	78,162 84	1,156,527 79	
Ties .....		8,557 68	687 07	363 16	412 68	2,387 88	412 68	2,387 88	2,387 88	2,387 88	2,387 88	66,425 18	
Telegraph Line .....		756 26	652 25	687 31	828 8	734 18	828 8	734 18	734 18	734 18	734 18	9,489 57	
Fencing .....		2,611 77	1,267 23	759 72	590 40	97 20	590 40	97 20	97 20	97 20	97 20	5,403 31	
Legal Expenses .....		495 34	413 50	328 01	380 90	412 40	380 90	412 40	412 40	412 40	412 40	4,699 09	
Office Expenses .....		404 58	430 86	400 95	385 1	407 05	385 1	407 05	407 05	407 05	407 05	5,342 71	
General Expenses .....		1,439 81	3,938 52	2,219 01	802 54	738 82	802 54	738 82	738 82	738 82	738 82	14,466 81	
Supplies .....	1 20	1,688 44	1,123 87	1,413 94	909 18		909 18					10,899 30	
Right-of-Way .....			105,347 16	1,730 30	2,542 50	4,297 65	2,542 50	4,297 65	4,297 65	4,297 65	4,297 65	396,103 03	
Rails and fastenings .....		10,965 3	9 50		1,141 95	35 00	1,141 95	35 00	35 00	35 00	35 00	5,864 12	
Switches and frogs .....		2,791 70	3,401 61	4,849 55	3,736 04	3,403 57	3,736 04	3,403 57	3,403 57	3,403 57	3,403 57	20,579 84	
Tracklaying .....		5,850 10	6,300 00	13,088 56	9,095 94	3,265 28	9,095 94	3,265 28	3,265 28	3,265 28	3,265 28	37,599 79	
Ballasting .....		57 50	17 50		4,126 12		4,126 12					75 00	
Incidentals .....												73,789 56	
Rolling Stock .....												1,377 55	
Freight Shed .....													
Total .....	1,702 72	169,799 41	227,615 59	135,210 74	122,515 39	101,510 96	122,515 39	101,510 96	101,510 96	158,603 17	158,603 17	1,842,451 62	

## STATEMENT.

Shewing total expenditure to December 31st, 1903.

Item.	1901		1902.		1903.		Total.
	Location.		Location.	Construction.	Location.	Construction.	
Sundries .....	1,308 93		3,389 04	2,000 37	2,045 14	10,964 34	20,123 47
Pay Rolls .....	6,413 88		13,874 00	4,322 48	11,345 47	28,752 59	68,260 91
Supplies .....	2,900 31		5,010 60	2,930 63	1,691 62	12,960 75	27,366 95
Office Expenses .....	35 15		1,755 79	252 31		5,611 77	10,495 02
General Expenses .....				3,200 73		14,466 81	17,667 54
Legal Expenses .....			714 00	1,442 00		5,659 18	7,815 18
Engineers' Construction .....				113,440 81		1,156,827 79	1,269,968 60
Right-of-way .....				1,571 00		10,829 30	12,400 30
Ties .....				570 04		63,681 86	66,251 92
Telegraph Line .....				86 63		9,489 57	9,576 20
Fencing .....				93 60		5,403 51	5,496 91
Cordwood .....				927 00			927 00
Bank Interest .....				168 95		38,412 98	38,581 93
Rails and fastenings .....						326,103 03	326,103 03
Switches and frogs .....						5,864 12	5,864 12
Tracklaying .....						20,579 84	20,579 84
Ballasting .....						37,599 79	37,599 79
Incidentals .....						75 00	75 00
Rolling Stock .....						73,789 56	73,789 56
Freight Shed .....						1,377 55	1,377 55
Less Proceeds sale of Cordwood .....						1,830,149 14	2,020,320 82
Total .....	10,658 27		24,743 43	133,846 57	15,082 23	228 40	228 40
						1,829,920 74	2,020,092 42

## SUMMARY.

Location .....	50,483 93
Construction .....	1,888,609 20
Exploration north of New Lisheard .....	5,841 16
Rolling Stock .....	73,789 56
Freight Shed .....	1,377 55
Total Expenditure to December 31st, 1903 .....	\$2,020,092 42

## STATEMENT No. 3.

Shewing expenditure on account of exploration north of New Liskeard, authorized  
by Order-in-Council dated August 19th 1903.

Item.	August.	September.	October.	November.	December.	Total.
Sundries ....	92 80	203 50	59 70	58 40	1 25	415 65
Pay Rolls ..	350 00	466 97	1,043 26	893 06	799 20	3,552 49
Supplies ....	172 60	1,152 75	335 14	212 55	.....	1,873 04
Total ...	615 40	1,823 22	1,438 10	1,164 01	800 45	5,841 18

## RECAPITULATION.

Statement No. 1 .....	\$2,779 75
Statement No. 2 .....	1,842,451 62
Statement No. 3 .....	5,841 18
Refund to Government (see Statement No. 1. Commission's 1st Annual Report).....	24,747 28
	<u>1,875,819 83</u>

## CR.

By overpayment to Contractor in 1902 .....	2,660 85
By proceeds sale of cordwood ....	228 40
	<u>2,889 25</u>
Total expenditure during year ended Dec. 31st, 1903 .....	<u>1,872,930 58</u>













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